THE AUTOMOBILE

WEEKLY — NEW YORK—THURSDAY, JANUARY 24, 1907—CHICAGO — 10 CENTS

You Can Pick Out A

GRAY & DAVIS GENERATOR

BY ITS CLEAR-WHITE LIGHT

The steady, powerful brilliance of its light certainly is unquestionable proof that it makes good. There is no light equalling it in real depth and strength.

And it is simplicity itself in operation—easily filled, automatic in action, except for the dropping of a single lever when you want light.

One Lever does the work

Explosion from over-generation is impossible. No dirt to bother. Simply LIGHT WHEN YOU WANT IT—clear-white, brilliant and penetrating.

Write for further details of our new "Type F" Generator—its economy, safety and convenience. They are valuable and interesting.

GRAY & DAVIS, Amesbury, Mass.

NOT THE LOWEST IN PRICE BUT
HARTFORD
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FOR QUALITY AND GOOD SERVICE

IMPORTANT

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¶ Any tire manufacturer or concern refusing to guarantee his or their tires on our rims should be dealt with cautiously. The Midgley Universal Rim is admitted by all automobile manufacturers and users to be the greatest advance yet made in rim and tire equipment.

¶ Other rims are in reality detachable flanges only, recognizing this as the only one entitled to be called a "Universal." All other rims designed to meet the same requirements are composed of at least SIX pieces; the Midgley of only THREE pieces.

See special page advertisement, "As to Rim Guarantees," page 79, this issue of The Automobile

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THE BIDDLE & SMART CO.

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Manufacturers of highest grade Automobile bodies, Limousines, Landaulettes and Touring Cars

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THE AUTOMOBILE

VOL. XVI. NEW YORK—THURSDAY, JANUARY 24, 1907—CHICAGO No. 4

A SHOW THAT HAS MADE AUTO HISTORY

WITH a final triumphal flourish that was in keeping with its undisputed reign throughout the week, that not even the most unpropitious of weather could diminish, the Madison Square Garden show came to a close on Saturday night last. It passed, but not into oblivion, for it will long be remembered as marking a standard of achievement only made possible by the accumulated experience of the seven years of effort in the same direction that had preceded it. Judging it from the one criterion that has served as a basis upon which to decide the success of every show that has gone before—that of attendance—it is not difficult to estimate how greatly this one has surpassed the preceding Garden exhibitions. Interest in this feature of it was doubled owing to the inauguration of the experiment of charging a double admission on two days of the

THE MUCH ADMIRED "BRIDAL CAR"—AN ISOTTA FRASCHINI—A LADIES' FAVORITE AT THE RECENT GARDEN SHOW.

AN EXHIBIT OF FUNDAMENTALS THAT WAS FETCHING.

week. But neither this nor the added damper of extremely inclement weather appeared to have any appreciable effect, either on the attendance of the days in question, nor of the aggregate for the week. Last year's attendance for the week rolled up into figures of such magnitude that it was hardly thought possible that they would be greatly surpassed for several years to come, yet it is confidently estimated that the increase during the past week over that of its predecessor of a year ago ranges all the way from 10 to 20 per cent.

Models Exhibited Represented Regular Stock.

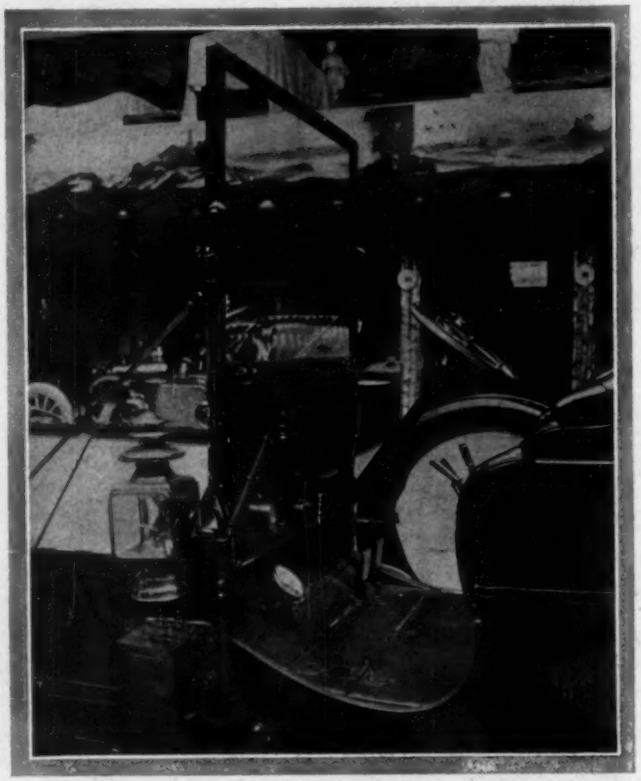
As for the business done—not even the time-honored "all sold out" begins to express it. A few years ago all the salesmen at the stands were at pains to assure the inquiring visitor that they had not a car to sell when his object in asking was known; in many instances their factories had closed contracts for every car they could possibly turn out during the delivery season long before they ever came to the show. They were only there to let the public see what they could do in the way of building cars and—they were not altogether adverse to booking a few more orders. The saying has long since passed into the limbo of other forgotten things, though seldom before has the maker come to the show with so much of his output sold in advance as was the case during the past week. The business of rushing work night and day for several weeks prior to the show in order to be able to ship a few models at the last moment is another thing of the past. The great majority of the cars that were rolled into place on the Saturday previous were as ready for exhibition as the decorations were to receive them, and both had been prepared with plenty of time to spare. With the exception of the polished chassis, which has come to represent a fixture, the cars staged at last week's show were not the laboriously prepared samples of other days. In but few instances did they lack anything but a supply of fuel, lubricating oil and batteries to make them ready for the road. Nor were they the first of their kind—the advance agents of their line for the coming season; far from it in numerous instances, as 1907 models galore have been in the hands of purchasers since last summer.

The Placing of Orders More or Less a Formality.

As to the actual amount of business done, that is something that is next to impossible to estimate with any degree of accuracy. That it has been large, both in individual instances as well as in the aggregate, and that it has exceeded by a substantial margin the amount done during any previous show week, may be taken for granted. A few years ago the makers generally were very keen about the business to be done at the show. It was really the opening shot of the season and was depended upon in very large measure to provide a book full of orders to keep the factory busy during the period intervening between the closing of the show and the coming of mild weather. The maker is probably no less keen about booking orders now than he ever was; but there has been a very radical change in this respect during the past few years, and its influence was never more apparent than during the show just closed. The show is no longer looked upon to the same extent as a market place, despite the fact that more actual orders were probably booked during the week in question than during the first three or four shows combined. But in all probability the same makers would have received those orders anyway—in other words, the show has come to be more or less of a formality where a large majority of autoists are concerned, though it still forms a sort of initiation for the constantly increasing number of recruits who find in the shining array of cars of all types an attraction too strong to be successfully resisted.

Technical Education of Buyers Is Noticeable.

But in the crowd that filled the aisles and swarmed over every booth for ten to twelve hours a day and every day the doors were open, it was harder than ever to spot the novice. If there be any one far-reaching effect for which the automobile may be said to be entirely responsible it is that of education. The curriculum has been diversified, but in no other respect is the effect so marked as where the mechanics of the car are concerned. People who had about as much idea of the technical requirements of the automobile as they did of the infinitesimal interim now talk learnedly of cylinder capacities and dimensions with regard to the horsepower as if they had been brought up on it, where formerly hardly one in a hundred could distinguish the transmission from the differential and had utterly no conception of the clutch or the reason for its necessity. To realize the extent to which this education has been carried on, or more properly speaking, the number of people who may be said to represent the automobiling public, it was only necessary to join the interested group invariably to be found surrounding one of the many polished chassis shown and listen to



POPE-TOLEDO DASH SHOWING FOLDING WINDSHIELD.

the string of questions fired at the salesman, who was doing his best to elucidate matters to an audience of varying degrees of automobile education. Where formerly there would have been but one mechanical "sharp" as the nucleus of such a group, half a dozen were in evidence. To quote a prominent maker, "the public now wants to know so much that the average inquirer is far from satisfied with the maker's statement that his motor deliver 25 to 30 horsepower. He wants to know the why and how of it, and what is more, he wants particularly to know how it is that blank's motor of smaller dimensions delivers more power, or why its builder says it does." And this is more than ever true of the power behind the checkbook, the women of the family. True enough, there were just as many who tried to give a horse-show flavor to things by exhibiting their elaborate toilets from the most conspicuous places; others whose only idea was to pose in the front seat of a car, and still others whose sole idea of a machine's merit was gained by jumping up and down a few times on the seats to test the resiliency of its upholstery while comparing the blending of colors in its exterior finish. This is a contingent that will probably always be in evidence to about the same extent, but that there has been an amazing increase in the number of women who can talk motors, gears and drives intelligently was something that could not fail to impress the observant and it put the salesmen on their mettle more than ever, for if it is humiliating to have a well-rehearsed story turned awry by a man and its teller stranded in a mass of contradictory statements, how much more so is it when done by a woman?

Close Approach to Standardization Was Noticeable.

Education has also overtaken the salesman in a great many instances, but there are not lacking those in which he is the same impossible being that he always was. "Four-cylinder vertical motor in front, 40-horsepower, multiple disc clucth, selective transmission, shaft drive" is still the burden of his song that has only changed in detail with the march of improvement. The only explanation is that the industry has grown so exceedingly fast that the demand for technically informed men in this capacity is still far greater than the supply, and the "mechanical man" or the "factory man" is as much a refuge in case of need as ever. But the fact that must have struck the observant eye, familiar with what has gone before, in the most forcible manner, was the close approach to standardization that has been reached, whether the cars were considered in the aggregate or in groups outlined by price limitations. In either case a composite might readily be made, including cars of both foreign and domestic origin, that would approximate so closely to a standard type of automobile as to make it difficult at first sight to note how the individual features of many of the varying forms of construction had been blended to form the whole. This was particularly noticeable when a comparison was made of the principal features of construction as represented by the leading foreign and American-built cars, in many cases a comparatively unimportant detail here and there not apparent to any but the trained eye, marking the only visible difference.

FOURTH AVENUE END OF MADISON SQUARE GARDEN, WHERE THE DEMONSTRATING CARS WERE LINED UP AWAITING ORDERS.

Quick Work Signalized the Dismantling at the Finish.

Just as the show with all its variegated paraphernalia and trappings swooped down on the Garden and occupied it to the last niche, with the same celerity it packed up and decamped after the most successful week it has ever enjoyed. Within less than twenty-four hours after the closing hour Saturday night, the floors and balconies were again as empty and the walls as bare as is their usual condition. A large number of the exhibits complete were sent direct to special freight trains that were awaiting their arrival. Elaborate plans had been made for the quick transfer of the exhibits to the Chicago show, and before the New York show had grown cold they were on their way to the Windy City in special trains which left for the West Monday morning.

The Turin (Italy) Automobile Club is organizing a six days' touring contest for the week of June 18-23. This contest will be run in lieu of the hill-climbing contest up Mont Cenis, which was suppressed by the authorities.

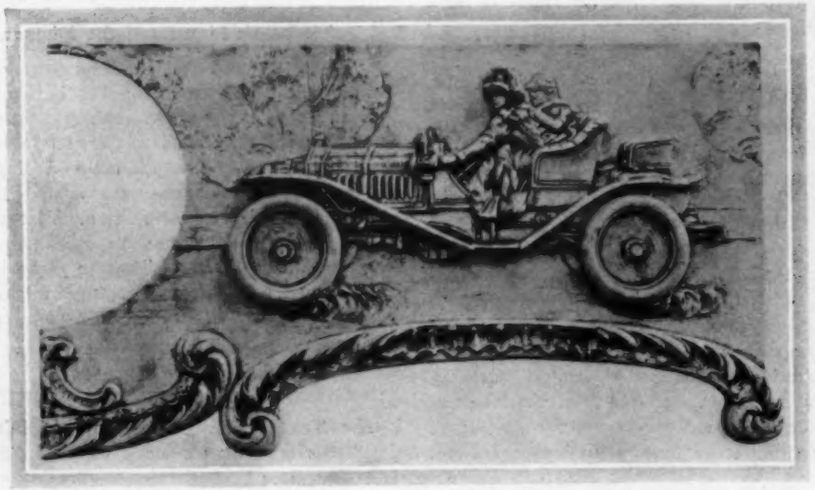
CHICAGO'S DECORATIVE SCHEME.

Not to be outdone by its eastern rival, Chicago has been putting forth strenuous efforts for the past two or three months in anticipation of revealing as elaborate and complete an effort in the form of an automobile show as has ever been thrown open to the public. Accustomed to doing things on a vast scale, it has made preparations to house the automobile in a setting calculated to surpass anything hitherto attempted where beauty and elaborateness of decoration are concerned, as well as to uphold its name for record-breaking achievements. In short, Chicago's show is to eclipse all former efforts, whether of the home or foreign talent; it is to be the largest ever held, whether in this or any other country. As was the case last year, every available square inch of space afforded by both the Coliseum and the First Regiment Armory, diagonally backing it on Michigan avenue, will be utilized. There will be a greater number of exhibitors, both of cars and accessories, than has ever participated in any American show—more than 300, in fact—and the problem that has confronted the management has been how to accommodate all that desired to have space. No one thing accentuates the magnitude of the show as a whole, so much as the fact that of the total number of exhibitors, 102 will display complete cars—the greatest number that has ever been brought together on a similar occasion in this country. Added to these there will be 190 exhibits of accessories of every conceivable nature and eight of motorcycles. The combined buildings contain more than 80,000 square feet of available space, which is said to be twenty-five per cent. greater than the total floor space occupied by any automobile show ever held outside of Chicago, not even excepting that of the St. Louis Exposition of two years ago. Further details of the plan of decoration adopted for the main floor of the Coliseum serve to give a better idea of the elaborate scale on which this is to be carried out than the advance announcements published some time previous. As an instance of this, there may be cited the fact that the arches which will form the dominating feature of the decorative scheme will range from 3 to 5 feet 6 inches in height and from 14 to 22 feet in length. The smaller arches have been designed with a view to the ornamentation of the accessory sections of the show, while the larger ones will be employed in the sections devoted to cars. One of the accompanying photographs illustrates a section of one of the smaller arches in question. The material employed is staff, while the finish is an old ivory shade. Another of the illustrations shows the square cap which will serve as the ground piece for the vertical columns. Wherever one looks the figure of Mercury will be in evidence. As the deity symbolical of one of the chief attributes of the automobile—that of speed—his figure will dominate every stand. Two of these figures will be placed on a low pedestal in the foreground of each exhibit, one of them being utilized to bear a brass sign carrying the name of the car shown at each space. The principal sign will be readily distinguishable at each of the spaces, and they will be of raised letters in white and gold, on scarlet background, topped off by a long narrow piece of ornamental staff forming a cap for the sign, and above this will be the arches referred to. Huge quantities of staff will be employed in a variety of forms.

MERCURY.

The fleet-footed messenger of the gods, will be a prominent factor in the Chicago Show decorations.

MERCURY TAKES THE STEERING WHEEL.



HALF-SECTION CHICAGO SHOW DECORATION, SHOWING BAS RELIEF.

A.M.C.M.A. PLANS.

Although no definite announcement was made, it is understood that at the recent meeting of its committee of management the American Motor Car Manufacturers' Association decided upon some important plans for next winter's automobile show. The report that the Grand Central Palace affair of last month permitted a return to exhibitors of $45,493 was received with much favor, and this might be expected, especially when it is known that members of the association received an additional 20 per cent. dividend.

CAPS SURMOUNTING THE COLUMNS.

The plan of having a central organization for activity in good roads was recommended for an open discussion at the annual meeting to be held in Chicago, when some action will be taken with a view of supporting and working with the National Association of Automobile Manufacturers on the plans recently outlined, which have for their purposes a centralization of all those organizations interested in securing good roads, so as to have concerted action along definite lines. A coalition of interests with this end in view must result in incalculable benefit to the industry as a whole, and no effort will be spared by the American Motor Car Manufacturers' Association to make the movement a pronounced success.

There are now forty prominent manufacturers of motor cars in the organization, which has been in existence less than two years. The annual meeting of the organization will be held on February 7, during the Chicago automobile show.

Two pounds to the horsepower is said to be the weight of latest Santos-Dumont aerial motor.

MECHANICAL BRANCH A. L. A. M. OPEN SESSION

"METAL Alloys Applied to the Various Parts of Automobiles" was the subject for discussion at the first day's meeting of the Mechanical Branch of the Association of Licensed Automobile Manufacturers, while the subject of gears and magnetos occupied the second day's session. Breaking away from the precedent hitherto adhered to of making these meetings something in the nature of star chamber proceedings, representatives of both special interests were invited to be present and take part in the discussion. Representing the ignition end, there were present: Robert Bosch, head of the American house handling the Simms-Bosch magneto; Messrs. Remy, of the Remy Electric Company; Foremin, of the Holtzer Cabot Company; Holly, of Holly Brothers; Hull, of the Polyphase Ignition System Company; Leon Rubay; Hart, of C. F. Splitdorf; Herz, of the Herz Manufacturing Company, besides representatives of the Heinze Electric Co., and Lavellette & Company, owners of the American patents on the Eisemann magnetos. From the gear-making interests there were present Messrs. Beall, of Brown & Sharp; Burgess, of the Boston Gear Works; Fellows, of the Fellows Gear Company; Cameron, of Gould & Eberhart, Jr.; and Gleason, of the Gleason Works.

To aid in bringing out the points that it was desired to emphasize, every one of the manufacturers of magnetos provided a sample of his machine, which was shown both complete and dismantled. The chief point dwelt upon was the necessity of standardization in order that any magneto on the market might be made readily applicable to any car without the necessity of any machine work. Another important feature of the discussion was as to the best position for the magneto—whether it should form an integral part of the motor itself or whether it should be considered an accessory and placed on the dashboard.

On the subject of gears the questions as to the value of different types, such as spur, bevel, helical and the like, was taken up in connection with the feature of the gears themselves, such as the proper length, width and pitch of the teeth, their general conformation and the relative efficiency in practice of the various types. The matter of the most suitable methods of cutting gear-teeth of different characters was also taken up and discussed at length. The members present were Hiram Maxim, Electric Vehicle Co.; Elwood Haynes, Haynes Auto Company; S. H. Cutler, Knox Auto Company; J. H. Jones and A. L. Riker, The Locomobile Company; Russell Huff, Packard Motor Car Company; M. C. Bernin, Lozier Motor Co.; C. J. King, Northern Motor Car Co.; David Ferguson, George N. Pierce Company; L. D. Hubell, Pope Motor Car Company; S. N. Sanborn, Alden, Sanborn & Company; H. E. Coffin, E. R. Thomas Detroit Company; Ralph Morgan, E. R. Thomas Motor Company, and F. D. Howe, Waltham Manufacturing Company.

SOCIETY OF AUTOMOBILE ENGINEERS' ANNUAL MEETING

ONE of the chief events of show week just past was the second annual meeting and dinner of the Society of Automobile Engineers, which was held at the New Grand, Thursday afternoon and evening, the dinner, at which forty-four of the members were present, being held between the two sessions. The afternoon session was opened by the reading of a paper by Thomas J. Fay, the subject originally assigned him having been "Some Features of Construction." Mr. Fay explained that his idea had been to talk about some features of construction on well-known cars that he did not like, but as this would savor too much of public disparagement, he had taken up the subject of materials instead, and gave a very interesting talk on steels and aluminum for automobile work, which aroused general discussion and brought out many valuable points. He was followed by Thomas J. White, who read a carefully prepared paper on alcohol, which, in view of the present situation where this fuel is concerned, was of unusual interest. In the discussion that followed Joe Tracy gave his experience in the use of this fuel on his recent test run, and numerous facts not commonly known were brought to light.

After the dinner the evening session was opened by the reading of a paper entitled "Some Facts Pertaining to Electric Ignition," by Henri G. Chatain. The paper was based upon numerous test experiments made with a high tension Simms-Bosch magneto, as well as on a large number of induction coils of both American and foreign makes. The results were illustrated by oscillographs thrown on the screen by a stereopticon. A great many slides were used, graphically showing every phase of current and potential change during the revolution of the inductor, and accurately establishing the electric range of the latter throughout which the current can be advantageously used for ignition, as well as the corresponding relation this bears to the crankshaft revolution. A large number of slides were also used to illustrate the differing characteristics of a great many induction coils of well-known makes, and voluminous data pertaining to them was given in connection with the result of each experiment, making the paper, as a whole, one of the most valuable of the kind that has been prepared in this country. Mr. Chatain said, by way of introductory, that he had been led to investigate the subject by reason of the fact that the only information extant as to the requirements was that a "hot" spark or a "fat" spark was what was needed, but that, after a great deal of experimenting he had been unable to exactly determine the nature of these characteristics, particularly a "fat" spark, a statement that aroused considerable merriment. He was followed by Henry Hess, of the Hess-Bright Company, who read a paper on "Change Gears and Their Journals," which was also profusely illustrated with the aid of the stereopticon, showing a large number of change-speed gear boxes of standard makes, as well as a great amount of graphic data in connection therewith. He also explained the requirements necessary where the load was simply radial or thrust, or where it was of both natures and the sizes of ball bearings to fit each case, beside citing some of the causes for their failure, chief among which was the prevailing impression that a bearing of this type does not require any lubrication, and that there is no particular necessity for protecting it from dirt. Mr. Hess's paper was interspersed with a number of witty sallies.

Owing to the time required for the presentation of the illustrated papers, there was no opportunity for discussion, and for the same reason the election of officers for the coming year had to be postponed, a resolution continuing the present incumbents in office during the interim being passed unanimously. Among those present were A. L. Riker, E. T. Birdsall, H. M. Swetland, H. L. Pope, Joe Tracy, Henry Hess, Thomas J. White, Henri G. Chatain, Thomas J. Fay, F. D. Russell, W. G. Wall, Paul L. Snutsel, C. E. Reddig, R. D. McDonald, Mr. Heckel, A. C. Schultz, J. G. Perrin, G. E. Franquist, A. M Holcomb, Charles F. Barrett, R. M. Beck, Lindley D. Hubbell, L. H. de L. Espel, Mr. Miller, Herbert L. Towle, R. B. Wasson, H. F. Donaldson, Mr. Acker, J. N. Ellsworth, H. F. Barker, L. T. Gibbs, H. P. Mooras, George O. Gridley, Mr. Conover, C. B. Hayward and Harold H. Brown.

N. A. A. M. ELECT OFFICERS AND REVIEW THE YEAR

RESPONDING to the call for the annual meeting of the executive committee of the National Association of Automobile Manufacturers, Inc., fourteen of the fifteen members gathered at the Victoria Hotel in this city on Thursday last. The chief business before the meeting was the election of five members of the committee to serve three years. The balloting resulted in the election of Thomas Henderson, Winton Motor Carriage Co.; Benjamin Briscoe, Maxwell-Briscoe Motor Co.; M. J. Budlong, Electric Vehicle Co., and E. H. Cutler, Knox Automobile Co., who were candidates for re-election, and William Mitchell Lewis, Mitchell Motor Car Co., who had not previously served on the executive committee. After the annual meeting of the association, which was sandwiched in between the two meetings of the executive committee, the newly elected committee convened for the purpose of electing officers for the association. The balloting resulted as follows: Albert L. Pope, Pope Manufacturing Co., president; S. D. Waldon, Packard Motor Car Co., first vice-president; Thomas Henderson, Winton Motor Carriage Co., second vice-president; William E. Metzger, Cadillac Motor Car Co., third vice-president; W. R. Innes, Studebaker Automobile Co., treasurer, and L. H. Kittridge, Peerless Motor Car Co., secretary. S. A. Miles continues as general manager.

ALBERT L. POPE,
Vice-president Pope Mfg. Co.
Elected President of the National Association of Automobile Manufacturers.

At the first meeting of the executive committee L. E. Burr was elected to represent the Woods Motor Vehicle Co., in place of J. Wesley Allison, and E. P. Chalfant to represent the Waltham Manufacturing Co., in place of F. E. Bradley. A resolution was adopted exempting the cars which took part in the elimination trials and the Vanderbilt race itself from the provision of the rule which prohibits manufacturers from exhibiting cars at local shows. The good roads committee announced that the work of forming a national association had progresesd to such an extent that a substantial appropriation by the N. A. A. M. seemed desirable, and suggested that $5,000 be set aside for the purpose, to be used only on condition that twice that sum be raised by the other associations interested. The executive committee indorsed the recommendation, but referred it to the new executive committee for definite action. The contest committee reported that it had prepared a set of rules for a contest, which were ordered printed and a copy transmitted to each member of the executive committee, pending a full discussion at a later meeting. In accordance with an arrangement entered into with the Motor and Accessory Manufacturers, Inc., under which it is intended that eventually the membership of the national association shall consist exclusively of manufacturers of automobiles, all makers of parts and accessories being referred to the newer organization, the resignations of the following associate members were accepted: Motsinger Device Manufacturing Co., National Carbon Co., Brown-Lipe Gear Co., Baldwin Chain and Manufacturing Co., Fisk Rubber Co., Whitlock Coil Pipe Co., Rose Manufacturing Co., Electric Storage Battery Co., Twentieth Century Manufacturing Co., Diamond Rubber Co., Badger Brass Manufacturing Co., G & J Tire Co., Hartford Rubber Works Co., Shelby Steel Tube Co., Veeder Manufacturing Co., R. E. Dietz Co., Dayton Electric Manufacturing Co., B. F. Goodrich Co., and the Goodyear Tire and Rubber Co.

This meeting was followed by the annual meeting of the association, at which forty-two members were in attendance. The report of President E. H. Cutler dealt exhaustively with the work of the past year. Commenting on the progress of events, Mr. Cutler said:

"It is a source of satisfaction to your president to be able to make, with unqualified pleasure, the statement that the development of the automobile industry during the past year has been fully in keeping with the optimistic view of the outlook as it appeared a year ago, and that the favorable conditions that prevailed have continued, and seem likely to continue, among those manufacturers who conduct their affairs on sound commercial lines. It is gratifying to note that among those concerns which practically everyone regards as the leaders of the industry (nearly all of whom are included in the membership of this association) there has been a disposition toward reasonable conservatism, and no disposition to force upon the market a greater number of cars than the market will readily absorb. In the quality of cars there has, of course, been marked improvement. So long as these two features go hand in hand there is little doubt about the continuance of that prosperity with which the automobile industry has heretofore been blessed.

"It has been the policy of the executive committee of this association, representing, as the members believe, the truly national organization of the United States, to adhere firmly to the conservative principles on which the association has been successfully conducted for the last seven years. It has been their endeavor to build up and help to perpetuate an association whose membership is regarded by the public as an indication of the stability of the member, and which, therefore, shall have among its members none but those concerns which have proved beyond question that they are deserving of the public's confidence.

"The result of this policy has already been made evident. During the early days of the organization, when its organizers were anxious to secure a large membership, little attention was paid to the standing of the applicant. Indeed, the condition of the industry at that time was such that there were few manufacturers old enough to have established themselves very firmly in the public's confidence. Some of the members who were admitted at that time have since fallen by the wayside, but it is a source of gratification that the policy adopted in later years has built up a membership among concerns so reliable that failures among them are practically unknown."

The report commented at considerable length on the efforts of the association to prevent unreasonable legislation, and showed that the efforts had been eminently successful. The association's test case in New Jersey is still proceeding. The case appears on its face to demand that no license at all shall be required, but the association would be perfectly satisfied with the establishment of the principle that one license must be recognized in all parts of the country. The test was commenced in 1905, and has been carried through the Magistrate's Court, the Court of Common Pleas and the Supreme Court of New Jersey. It has now reached the Court of Errors and Appeals, and will, in due course, be carried to the United States Supreme Court. The report also presented many interesting details relative to the good roads movement. It will be printed and forwarded to the members of the association in due course. The treasurer's report showed the financial condition of the association to be eminently satisfactory, the balance in the hands of the treasurer being considerably greater than at the same period last year, despite somewhat heavy outlays during the interim. This will be largely increased by the Chicago show. No rebate will be given exhibitors, a reduction in space rates being made instead.

HOTCHKISS, OF BUFFALO, TAKES A. A. A. HELM

MUCH is expected of the new administration of the American Automobile Association. William H. Hotchkiss was an able president of the Automobile Club of Buffalo, and under his leadership the New York State Automobile Association became strong and energetic. Now the man from Buffalo has taken the A. A. A. helm, and the effects of his early occupancy of the office are apparent.

W. H. HOTCHKISS.
The New A. A. A. President.

The concluding session of the old board of directors and the first meeting of the succeeding board were held at the new clubhouse of the Automobile Club of America last Thursday and Friday. The organization being a New Jersey corporation, it was necessary to hold a proxy meeting of stockholders at East Orange, N. J., on Friday morning.

Under the influence of the magnetic enthusiasm of the new president extensive and far-reaching plans were outlined for the immediate future. Charles Thaddeus Terry is to head the new legislative board; Robert P. Hooper, of the Automobile Club of Germantown, will retain the chairmanship of the good roads board, and it has been known all along that Mr. Hotchkiss particularly desired Jefferson deMont Thompson to continue as racing board chairman.

The other chairmanships will be announced very shortly, as the new president does not desire to lose any time in getting under high speed. This is apparent by the quick completion and announcing of the executive committee upon which will devolve much of the work hereafter, owing to the constitutional change whereby the board of directors will only meet in March, September, and December. President Hotchkiss names as the four additional members of this committee William K. Vanderbilt, Jr., Jefferson deMont Thompson, A. G. Batchelder, and Sidney S. Gorham. The president, first vice-president, and treasurer are members by reason of their offices.

Neither Mr. Farson, the retiring president, nor Mr. Gorham, the secretary, sought a continuance in office. Mr. Elliott, the new secretary, is especially fitted for his task because of an uninterrupted occupancy of the New York State Automobile Association secretaryship. Herewith is the new official roster:

Officers of the A. A. A. for 1907.

President—William H. Hotchkiss, Automobile Club of Buffalo.

First Vice-President—Lewis R. Speare, Bay State Automobile Association.

Second Vice-President—Asa Paine, Florida East Coast Automobile Association.

Third Vice-President—Ira M. Cobe, Chicago Automobile Club.

Treasurer—George E. Farrington, Automobile Club of New Jersey.

Secretary—Fred H. Elliott, Syracuse Automobile Club.

Executive Committee—William H. Hotchkiss, Lewis R. Speare, William K. Vanderbilt, Jr., Jefferson deMont Thompson, A. G. Batchelder, Sidney S. Gorham, George E. Farrington.

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Illinois State Association—John Farson, Chicago A. C.; Ira M. Cobe, Chicago A. C.; Sidney S. Gorham, Chicago A. C.; George W. Ehrhart, Decatur A. C.; S. P. Irwin, Bloomington A. C.

Ohio State Association—F. T. Sholes, Cleveland A. C.; Windsor T. White, Cleveland A. C.; Val. Duttenhoefer, Jr., A. C. of Cincinnati.

California—Dr. Milbank Johnson, A. C. of Southern California.

Connecticut—J. Howard Morse, Hartford A. C.; George M. Sanders, New Britain A. C.

Florida—Asa Paine, Florida East Coast A. A.

Georgia—H. J. Lamar, Macon A. C.

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Maryland—W. S. Belding, A. C. of Maryland; Osborne I. Yellott, A. C. of Maryland.

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Minnesota—Frank M. Joyce, Minneapolis A. C.; F. A. Wood, St. Paul A. C.

Missouri—Roy F. Britton, A. C. of St. Louis.

Pennsylvania—George H. Smith, Quaker City Motor Club; Robert P. Hooper, A. C. of Germantown; Philip S. Flinn, Pittsburg A. C.

Rhode Island—William P. Mather, Rhode Island A. C.; R. La Lippitt, Rhode Island A. C.

Texas—E. H. R. Green, Dallas A. C.; H. S. Crawford, San Antonio A. C.

Wisconsin—James T. Drought, Milwaukee A. C.

Inaugural Address of President Hotchkiss.

The inaugural address of President William H. Hotchkiss is a most interesting document, containing much worth careful reading, and digestion. It is herewith given in its entirety:

In assuming the executive office of the association, I deem it proper to lay before you certain matters of present importance to American motorists.

A Truly National Body.—The association is now in its fifth year. It comprises 5 State associations, 23 clubs and organizations not affiliated with State bodies, and 267 individual members. The State associations are made up of 48 clubs, having 7,035 members. The grand total of membership is 8,857, scattered over all the States and federal districts, except Oklahoma. It is the only truly national organization devoted to the pleasure and sport of motoring. It is still in its infancy, with its work hardly organized and its functions and powers little appreciated. Those who are charged with its management, therefore, should approach their duties with a proper sense of responsibility. On their work may depend the making or the marring of a cause vital to but thousands now, but soon to be that of the tens, nay the hundreds, of thousands of the coming horseless age.

FRED H. ELLIOTT.
Elected Secretary of the A. A. A.

Merely a Central Committee.—Motorists are chiefly interested in good roads, fair laws and ordinances, and in a proper observance and enforcement of them. Thus, the functions of government with which they are most concerned are the police and taxing powers; both functions of the State, rather than of the nation. Their interests thus being local, the work to be done in their behalf must be done largely in their home communities.

Hence, this association did most wisely when, at a recent meeting of this board, it modified its by-laws in ways tending to encourage the organization of affiliated State associations wherever motorists are sufficiently numerous or interested. This step should be followed by a comprehensive plan whereby the active control of movements toward better highways and fair local legislation shall be vested in such State associations; the national body as to these matters becoming merely a central advisory committee. Such

a plan would, of course, leave with the association proper the control of all legislation and activities national in their scope. To this end I urge the early adoption by the board or its executive committee of a statement defining the limits and the powers of the State and national bodies; this that neither may trench on the sphere of the other, and all work harmoniously for the common cause.

Federal Legislation.—Our American system of independent federated States makes any national legislative program difficult. Motor vehicle laws now in force differ widely in their provisions as to the rate of speed, the means of identification, the penalties for violations, and the fees or taxes paid. Some States are liberal; others, by leaving these matters to their cities and towns, almost proscriptive. In present conditions I mean the newness of the motor vehicle as a means of transportation and the prejudice created by a few heedless or brutal drivers—these differences will for a time continue, and, perhaps, increase. Activity by State associations will, however, hasten the inevitable day when the only local regulation as to speed will be that a motorist shall not drive at a greater rate than is reasonable or proper, having regard to the traffic on and the condition of the highway at the time. Whether such consummation shall be reached before motor vehicles become more numerous on the streets and roads than horse-drawn vehicles is a question. That, perhaps, depends more than we think on how sanely we and our neighbors now drive. But, the day will come, and before the closing of the century's second decade!

Of late, however, there has sprung up in some States a tendency which must be checked—a tendency to treat the non-resident motorists as good picking, a tendency, in short, to tax. Several States permit the non-resident owner of a motor vehicle to operate it within their boundaries without additional registration, some even without limitation as to time, always provided the motorist observes the police regulations there in force. In such States the horse-drawn and the motor-driven vehicles are, so far as possible, on an equal footing, as they should be. Elsewhere, however, desire for revenue has led to a State toll tax, in the shape of a license or registration fee. The amount exacted is not yet large, but the scheme is yet young. Legislators who bring in bills inforcing new ways of getting revenue, especially from the so-called privileged classes, are, perforce, popular with their constituencies. The cloud no larger than a man's hand may soon darken the sky. Immediate action is essential. The call for it is already strident and country-wide. What shall that action be?

The demand is for federal regulation of the motor vehicle as an agency of commerce and intercourse. How far such demand is reasonable and its realization possible have of late been much debated. It should early have attention from the association's legislative board, and should be pressed to a conclusion in the next Congress.

Clearly, a tax on a non-resident's property while temporarily in the taxing State, such property presumably being already taxed in the State of the owner's residence, might, because contrary to general law, be difficult of enforcement. Hence, a greedy State attempts to evade by requiring non-resident owners or operators to register for purposes of identification, and furnishes those registered with numbers, seals or licenses, all on payment of a so-called fee. The sum total of these fees creates a fund much in excess of the State's outgo, which, with some unction, the State devotes to the maintenance of its improved highways!

Now, it is not the function of this association, as such, to quarrel with the lawmakers of States, who, in an exercise of the police power, pass registration laws affecting resident motorists and devote the surplus revenue thus obtained to the up-keep of highways. That matter is one for each State association to handle as best it may. If there is thereby no double taxation—which there may be—and if registration for identification purposes is, in present conditions, a reasonable exercise of the police power—which it probably is—then there can be no just complaint.

But when a motorist thus tagged and taxed chooses to drive his car into or through another State, it may well be urged that both the requirement of additional registration and the exaction of a fee or tax therefor is unlawful, because an unreasonable exercise of the police power. If thus unlawful, it is also unconstitutional, because an unjust and unwarranted interference with the commerce and intercourse between the States. The State of the motorist's residence has provided means for his identification in case he violates law or does injury. No other State should be permitted to do it over again.

Without further argument at this time, however, the following considerations are suggested, to the end that discussion may be stimulated and the work of the legislative board and the corresponding local committees be somewhat guided:

(1) It is within the police power reserved solely to the State by the fathers of our government to regulate the use of the State's highways by citizens of all the States, provided such regulation is reasonable, and does not interfere with free interstate intercourse. Thus, Congress has perhaps now no power to pass a law fixing rates of speed or providing penalties.

(2) While laws enforcing the police power must be uniform in their operation, conditions may exist which permit different laws for different classes of persons. Thus, in present conditions, the States probably have power to pass motor vehicle laws requiring registration and regulation speed.

(3) Identification being, however, accomplished by the registration features of the law of a motorist's residence, a new identification required by the law of another State is probably an unreasonable exercise of the police power and, if so, unlawful.

(4) The decisions of the Supreme Court and the tendencies of public opinion warranting the conclusion that the word "commerce" in Article I, Paragraph 8, of the Federal constitution means not only business intercourse, but also intercommunication in a broad sense, Congress probably has power to pass a law, for instance, whereby a motorist may certify to some department or bureau of the national government that his motor vehicle is duly registered in his own State and that it is his bona fide intention to use such vehicle in a State or States other than that of his residence, and that, thereupon, and on a certificate of such filing being issued to him, he shall become exempt from further registration under the laws of another State.

(5) That, as to other features of motor vehicle laws, uniformity can be obtained only through such bodies as the present Congress on Uniform Laws, which meets each year with the American Bar Association, and is made up of commissioners appointed by the governors of the different States, one of whom at this time fortunately is Charles Thaddeus Terry, the attorney for the National Association of Automobile Manufacturers.

(6) That State associations and clubs can, perhaps, solve the problem more simply by securing from State legislatures provisions which shall exempt non-resident motorists from the registration features of their laws.

How far it is safe to leave so important a matter to revenue-seeking States should first be determined. If thought unwise—granting always that the legal views here suggested are correct—the legislative board should divide its work into two branches: (1) The preparation of a federal bill to prevent duplicate registration and numbering, and present the same at the opening of the sixtieth congress in December; and (2) after proper investigation and discussion, the drafting of a sample or model motor vehicle bill, which, when agreed to, should be presented to the Congress on Uniform Laws next August, to the end that the same may be presented to the various State legislatures for adoption. The federal bill, if enacted into law, would end the confusion, annoyance and expense due to multiple registration; the other might, in the end, eliminate State lines as to speed, penalties and rules of the road.

Only by a program which is equally broad can the association perform its duty to its members and American motorists generally.

Increased Membership.—An active campaign for new members should be begun at once. The association is already large, but, when compared with the number of motorists in the country, is really small. This condition can be easily remedied, and must be if the national body is to continue really national. Further, the increase must be geographical as well as numerical. Particular attention should be given those States where the motor vehicle is as yet little used, and centers of activity formed which shall combat existing prejudices and, if possible, shape future laws.

This work will naturally fall on the executive committee and the secretary, and plans should be at once made which will be both comprehensive and practical. Consistent and persistent work should result in doubling within the year not only the total membership of individuals, but also of the affiliated State associations and clubs. Each city and village of 10,000 population in, at least, the Eastern, Northern, and Middle Western States, should have an automobile club, and such clubs should, as soon as possible, be federated into State associations. To these ends, there should at once be prepared circulars detailing the advantages derived from membership and outlining the steps necessary to club organization, with sample by-laws to help toward uniformity. The present individual membership of the association should be the nucleus of this work.

Finances.—The work just outlined will require funds considerably in excess of the membership revenues of the association. Fortunately, due to the careful management of the last Vanderbilt Cup Race by the retiring racing board, the association begins the fiscal year with a goodly surplus. A similar addition to the treasury is expected from the race in October. Increased membership, too, will correspondingly increase our revenues. But great care will be required to keep expenses down. Indeed, other means of raising revenue may perhaps be required, and sooner or later the association must adopt a financial policy which will put at its disposal from dues alone sufficient funds to do its work.

Roads and Parkways.—As already suggested, the function of the national body is here but advisory. The day has not yet come when federal aid can be expected, much less counted on. Present

(Continued on page 201.)

PREDETERMINATION OF MAXIMUM MOTOR POWER*

By R. ARNOUX, Vice-President Technical Committee, Automobile Club of France.

WE have just seen how in a motor of given dimensions, varying with the angular velocity, the power increases. It now remains for us to note how these elements increase with the geometric dimensions of the motor. For this we must still consider the equation (8), which may be stated as follows:

$$\frac{P}{\frac{\pi D^2 C}{4}} = p_m \cdot \frac{\omega}{2 \cdot 60} \qquad (12)$$

Since the study of a motor of given cylinder capacity shows that the product of the average pressure by the angular velocity (which product is equal according to this last equation to the *volumetric power*, that is the relation of the power to the volume of the cylinder) reaches a maximum and that at this maximum the function preserves a high constant value, it may be asked if, in view of this *experimental* constant, it would not be possible to establish a predetermined formula of the maximum power of explosion motors, in which only the cylinder and one of its geometric dimensions, such as the bore for example, would enter.

With this aim in view, we have compiled in Table No. 1 the data resulting from *experiments* made with 96 motors of varying dimensions and types of construction. This table gives the diameter of the bore, the total piston travel, the maximum power and the angular velocity of each motor, expressed in turns per minute at which this maximum power is developed. All of the motors from which the data were drawn for the table in question were of the four-cylinder vertical four-cycle type having but a single piston in each cylinder; their cylinder diameter, or bore, varying between a range having 65 mm. as its minimum and 190 mm. as its maximum; their cylinder volume varied between .9 and 16.25 liters, their maximum power between 10 and 148 horsepower, and their angular velocity between 950 and 1,650 turns per minute. Particularly where the factor of angular velocity is concerned, it will be noted that this element varies but little, as its value in the case of the least powerful motor, No. 1, was 1,450 r. p. m. and but 1,250 r. p. m. for the most powerful motor, No. 96. Regarding the mean linear speed of displacement of the piston, this was 3.62 meters per second in the case of the first motor developing 10 horsepower, and 7.70 meters per second or more than double, for motor No. 96, developing 148 horsepower.

Tabulated Results of Extensive Experiments.

An examination of this table in which the motors are grouped in the order of the diameter of their bores, demonstrates that, among motors having the same diameter bore, it is not those which have the longest stroke, and in consequence the greatest volume, which develop the greatest power, and as we are striving to derive a formula permitting of the predetermination of the maximum power that a motor of given cylinder dimensions can develop, we have chosen among the 96 motors of Table 1 those which developed the maximum power with regard to their cylindrical volume. By carrying the volumes on the abscissæ and the corresponding powers on the ordinates, we have obtained the alignment of the 12 points shown in Fig. 2. If the relation of the power to the volume of the cylinder, a relation to which we have applied the term *"the highest volumetric power,"* were constant and, in consequence, independent of the dimensions of the motor, the 12 points shown on Fig. 2 would be ranged along a straight line rising directly from its point of origin. Now, if this relation be calculated by taking motors which are extreme instances, it will be found that the *volumetric power* reaches 12.55 horsepower per liter in the case of the weakest motor and drops to 8.31 horsepower per liter in the case of the most powerful. After that it was quite clear that it was necessary to attempt to make these 12 points on a parabolic curve of the form of

$$P = kVn,$$

in which k is a parameter of similitude, V is the total volume of the cylinders and n an exponent less than unity. This parabolic, of which the axis coalesces with the line of the abscissæ, is the following:

$$P = 11{,}1 \cdot V^{,}9,$$

which gives the maximum power, in horsepower, obtainable from a motor of total cylindrical volume V, expressed in liters or cubic centimeters.

Volumetric Power Decreases as Dimensions Increase.

This is of interest in that it demonstrates definitely that the volumetric power of the internal combustion motor decreases constantly in proportion to the increase of its dimensions, and in consequence of its power. We have already demonstrated above that this *volumetric power* is equal to the product of the mean pressure by the angular velocity, a product which we have

NUMEROS d'ordre	DIAMETRE d'alésage en mm.	COURSE du piston en mm.	VITESSE angulaire en tours par minute	PUISSANCE maxima en chevaux au frein	NUMEROS d'ordre	DIAMETRE d'alésage en mm.	COURSE du piston en mm.	VITESSE angulaire en tours par minute	PUISSANCE maxima en chevaux au frein
1	65	75	1450	10	49	127	140	1350	45
2	65	70	1600	12,5	50	130	145	1340	50
3	70	80	1400	12,4	51	130	138	1350	60
4	75	75	1480	17,5	52	135	132	1400	65
5	75	82	1350	14	53	136	140	1300	56
6	80	90	1250	14,5	54	140	145	1300	67
7	84	110	1200	15	55	140	140	1380	70
8	84	100	1500	49	56	140	160	1150	60
9	85	100	1500	21	57	140	150	1200	63,5
10	85	110	1550	19,5	58	140	138	1400	76
11	85	100	1650	18,4	59	144	150	1350	77
12	85	90	1600	22,5	60	145	150	1300	72
13	87	124	1150	20	61	145	155	1200	67
14	88	130	1150	17	62	150	160	1400	81
15	90	120	1400	20	63	150	165	1200	72
16	90	130	950	18	64	150	160	1250	76
17	90	100	1500	22,5	65	150	148	1400	90
18	90	95	1600	24	66	150	155	1450	85
19	92	135	1200	18	67	155	160	1250	82
20	95	130	1150	20	68	155	150	1400	93
21	95	95	1650	26,8	69	155	160	1150	79
22	95	110	1600	24,3	70	155	150	1360	85
23	100	140	1250	32	71	160	172	1250	86
24	100	150	1150	24	72	160	165	1300	96
25	100	105	1500	33,5	73	160	200	1200	101
26	104	130	1350	33,5	74	160	140	1350	101,5
27	104	120	1250	31,8	75	160	170	1250	90
28	104	110	1550	27,7	76	160	180	1200	80
29	104	130	1500	35,4	77	160	158	1350	106
30	105	140	1150	30	78	165	180	1200	96,5
31	108	150	1100	38	79	165	175	1150	93
32	110	130	1350	35	80	165	155	1300	110,5
33	110	140	1550	40	81	165	140	1380	105
34	110	125	1400	36,5	82	170	150	1200	100
35	110	140	1150	30	83	170	175	1050	110
36	110	142	1200	31	84	170	165	1200	120
37	115	115	1550	45	85	175	180	1200	115
38	115	130	1340	36,4	86	175	185	1150	109
39	115	125	1400	40	87	175	170	1300	126
40	120	140	1250	43	88	180	145	1250	110
41	120	140	1150	40,5	89	180	150	1200	115
42	120	130	1300	47	90	180	150	1200	125
43	120	122	1350	52	91	180	160	1100	120
44	122	130	1300	50	92	180	160	1300	135
45	125	130	1480	56,25	93	185	150	1300	125
46	125	135	1300	42	94	185	160	1100	130
47	125	140	1300	40	95	190	185	1250	148
48	125	150	1150	57,5	96	190	200	1150	130

TABLE NO. 1.—Data from experiments made on 96 four-cycle, four-cylinder motors, one piston per cylinder

* Translated from "Bulletin Officiel de la Commission Technique." By Charles B. Hayward. Continued from pages 49-51, issue of January 10.

further shown is proportional to the density of the mixture at the end of the aspiration by the *frequency* $\frac{\omega}{260}$ of that aspiration. As the variation of that *frequence* is very small, as may be seen by reference to Table 1, the conclusion is that the *density* of the explosive mixture corresponding to the maximum power developed by an internal combustion motor, decreases constantly in proportion to the growth of its dimensions and the power of the latter.

It is easy to see that this depends on the *length* of the gaseous column contained between the air inlet of the carbureter and the head of the piston, a distance that is necessarily augmented with the increase of the linear dimensions of the motor and in consequence, with its power. In fact, that which regulates the power of the internal combustion motor is not the *loss* in volume of the aspiration, nor the relation of the gaseous volume aspired to the duration of the aspiration, which increases without limit with the angular velocity of the motor, but the loss *in weight*, or loss of *mass*. It may easily be demonstrated thermodynamically that the latter passes a maximum in the same time that the function,

$$\frac{\sqrt{L \cdot r}}{r}$$

in which *logê* designates a Naperien logarithm and r the relation of the upward pressure to the downward pressure. The maximum of that function is obtained by reducing its derivative to zero,

$$\frac{1}{r^{\frac{1}{2}}} - \frac{2}{r^{\frac{3}{2}}} \log_e r = 0$$

which gives:

$$2 \text{ L.r} = 1,$$

from which:

$$L\ (r^2) = 1 = \log_e e.$$

$$r = \sqrt{e} = \sqrt{2{,}718} = 1{,}649$$

where the inverse is equal to 0.6065. This is then the *depression* produced by the displacement of the head of the piston, which is the direct function of the speed of that displacement, reaching (1—0.6065) or 0.4 of an atmosphere, of which the *loss* (relative to the mass) of the gas inspired reaches a maximum. The reason for this maximum is easily descernible owing to the fact that the fluid is highly compressible. The loss in volume evidently grows without limit with the speed of the motor, but the density of the gaseous mixture and in consequence, the work of the cylinder, tends, on the contrary, toward zero.

On the other hand, *the loss in weight* of the gaseous mixture, which is the direct function of the depression and inversely of the density of the flowing mixture, reaches a corresponding maximum, as we shall see, at the depression of 0.4 of an atmosphere. But the gaseous fluid, flowing under that difference of pressure, has to travel a distance increasing with the geometric dimensions of the motor, and its *loss in weight*, which regulates the power developed, varies, all other things being equal, as may be shown thermodynamically, inversely with the length of the inlet piping. Independently of the diameters given to the latter as well as to the valves, it is that length of the gaseous column contained between the air inlet of the carbureter and the head of the piston, which compels its reduction as much as possible as well as giving rise to the necessity for equalizing it between the different cylinders, where it is desired to produce the maximum amount of power from a cylinder of given dimensions. Builders of motors giving a high actual horsepower for aviation, as well as high power for their weight, have solved the problem by placing the carbureter in the immediate vicinity of the inlet valve of each cylinder.

The Bore With Relation to the Maximum Power Obtainable.

The predetermination of the maximum amount of power of an internal combustion motor, given one other element beside the cylindrical volume, the bore, for example, has occupied engineers closely for the past three years. M. A. Varlet, engineer of the Delahaye works, first proposed, in 1903, a formula based on the square of the diameter of the bore, which has been revived very recently by the Technical Commission. The fact which led M. A. Varlet to propose such a formula, was the constance of the *linear* speed of the piston, a speed which, with the, at that time, almost universal employment of the automatic inlet valve, varied but little with the geometric dimensions of the motors and, in consequence, with their power. It may be readily demonstrated, in fact, that if this linear speed be designated by v, there will result, employing the preceding notations:

$$v = \frac{2\,C\,\omega}{60}$$

from which:

$$\omega = \frac{60\,v}{2\,C}$$

and in carrying that value of ω to the equation (8)

$$P = \frac{\pi \cdot v \cdot p_m}{16} \cdot D^2$$

an expression, *independent of the travel of the piston*, which may be reduced to a parabolic function of the second degree,

$$P = KD^2$$

in which K is a constant, if it be admitted that the mean pressure Pm corresponding to the maximum power, is equally con-

PUISSANCE EN CHEVAUX	DIAMÈTRE EN MILLIMÈTRES	PUISSANCE EN CHEVAUX	DIAMÈTRE EN MILLIMÈTRES	PUISSANCE EN CHEVAUX	DIAMÈTRE EN MILLIMÈTRES	PUISSANCE EN CHEVAUX	DIAMÈTRE EN MILLIMÈTRES	PUISSANCE EN CHEVAUX	DIAMÈTRE EN MILLIMÈTRES
1	20	36	103,1	71	137,3	106	162,6	141	183,
2	30	37	104,4	72	138	107	163,2	142	183,6
3	37	38	105,6	73	138,7	108	163,8	143	184,2
4	42,5	39	106,8	74	139,4	109	164,4	144	184,7
5	47	40	108,2	75	140,2	110	165	145	185,2
6	50,2	41	109	76	141	111	165,6	146	185,8
7	53,2	42	110	77	141,8	112	166,2	147	186,3
8	56,1	43	111	78	142,6	113	166,8	148	186,9
9	58,8	44	112	79	143,4	114	167,4	149	187,4
10	61,3	45	113,2	80	144,2	115	168	150	188
11	63,6	46	114,3	81	145	116	168,6	151	188,6
12	65,9	47	115,3	82	145,7	117	169,2	152	189
13	68	48	116,4	83	146,4	118	169,8	153	189,5
14	70	49	117,6	84	147,1	119	170,4	154	190
15	72	50	118,8	85	147,8	120	171	155	190,5
16	74	51	119,9	86	148,5	121	171,6	156	191
17	76	52	120,9	87	149,2	122	172,2	157	191,5
18	77,8	53	122,1	88	150	123	172,8	158	192
19	79,4	54	123,1	89	150,7	124	173,4	159	192,4
20	80,8	55	124,1	90	151,4	125	174	160	192,8
21	82,3	56	125	91	152,1	126	174,6	161	193,2
22	84	57	125,9	92	152,8	127	175,2	162	193,6
23	85,6	58	126,8	93	153,5	128	175,8	163	194,1
24	87,1	59	127,6	94	154,2	129	176,4	164	194,8
25	88,6	60	128,4	95	154,9	130	177	165	195,2
26	90	61	129,3	96	155,6	131	177,5	166	195,7
27	91,4	62	130	97	156,3	132	178	167	196,2
28	92,8	63	130,8	98	157	133	178,5	168	196,8
29	94,2	64	131,7	99	157,7	134	179,1	169	197,2
30	95,6	65	132,6	100	158,4	135	179,6	170	197,7
31	96,9	66	133,4	101	159,1	136	180,2	171	198,4
32	98,3	67	134,2	102	159,8	137	180,7	172	198,5
33	99,6	68	135	103	160,5	138	181,2	173	199
34	100,9	69	135,8	104	161,2	139	181,8	174	199,4
35	102,1	70	136,6	105	161,9	140	182,4	175	200

TABLE NO. 2.—Maximum power output (in horsepower) of four-cylinder motors with regard to the diameter of their bore (in millimetres).

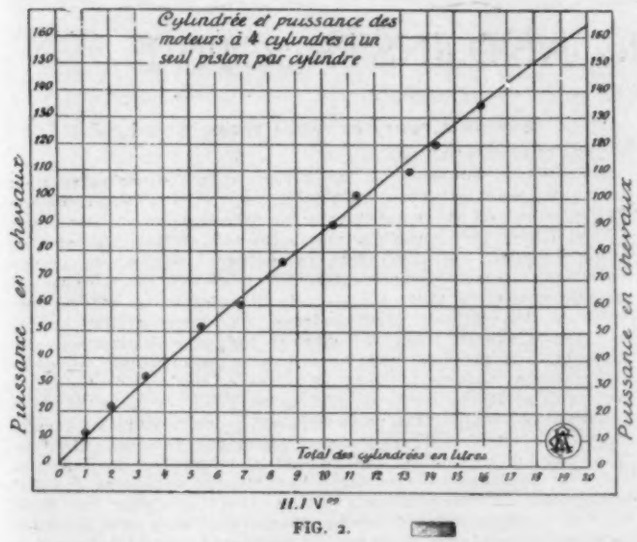

Cylindrée et puissance des moteurs à 4 cylindres à un seul piston par cylindre
Puissance en chevaux
Total des cylindrées en litres

FIG. 2.

stant in all motors, or independent of their dimensions. It is further clear that the same result will be obtained by admitting the constance of the *product* of the mean pressure *Pm*, by the speed of displacement of the piston.

There is but a single method of verifying the accuracy of that formula, which is that of comparing the results it furnishes with those directly obtained by experience. This is what has been done in the compilation of the chart Fig. 3, on which the bore diameters, expressed in millimeters, are carried on the abscissæ, and the corresponding maximum powers expressed in horsepower (chevaux) of the 96 motors tabulated in the first table. These powers are indicated by the points, each of which is surrounded by a small circle. Despite the considerable differences in power represented by motors of the same diameter of bore, it will be seen, nevertheless, that the law of increase of these powers where the bore is concerned, indicates a net parabolic curve; but it is indicated clearly by the tracings of the parabola of the second degree:

$$P = 0.0028\ D^2$$

so that if the parameter K be calculated in such a manner as to give the exact values, that is, equal to those of the mean corresponding to current bore diameters between extremes of 85 and 105 millimeters, they give powers slightly superior to those shown by actual experience in the case of small motors, and very much less in the case of motors of large bore. The *degree* of the parabola KD^2 is then itself very weak.

For this reason we have been engaged for the past several months in the attempt to establish another parabolic formula in departing from the following hypotheses. In lieu of assuming the geometric dimensions to be constant and independent of the product of the mean pressure by the *linear* speed of the piston, the product of that same pressure by the *angular* velocity may be considered as practically constant, which appears to be the result drawn from the results of experimental tests on a lot of thirty motors, the data of which we have in our possession at the moment. Under these conditions the formula (8) demonstrates that the power of the internal combustion motor is proportional to its cylindrical *volume*. On the other hand, experience shows that, all other things being equal, as the travel of the piston is increased or diminished, the angular velocity corresponding to the maximum power of the motor varies in an inverse sense, so that *the product of the travel by that angular* velocity reaches a maximum practically corresponding to the square of the bore, that is, a stroke equal to the diameter, which gives the formula of the cube of the diameter of the bore:

$$P = 0.000025\ D^3$$

which was published by our colleague, M. Lucien Perisse, in his study on the *Estimation of the Power of an Automobile Motor*, which appeared in August, 1906, in the *Bulletin de la Commission Technique*. At the moment, the results furnished by that formula agree quite correctly, as shown by page 40 of the work of our colleague, with the results of the experimental tests which we had at that time. Since the data of the experimental tests collected by us in working on another lot of 60 motors, and carried on the same chart, Fig. 3, together with the preceding lot, at the same time that cubic parabola,

$$P = 0.000025\ D^3$$

were traced, making it clear that in furnishing figures more in accordance with the experimental results of the experiments, than those of the parabola of the square of the diameter of the bore, the degree of the cubic parabola is very high, since the inverse of the parabola of the square gives very weak values for the powers of the motors of small bores, and very high for those of large bores, if its parameter K be calculated for that which gives exact values for medium bores.

The degree of the representative parabolic function KD^n is contained between two and three. M. Farnoux, technical editor of *L'Auto*, after having adopted the exponent 2.15, manifestly too feeble, has proposed the use of the exponent 2.4, which, according to our calculations, gives a parabola on which the variation of the curve follows more faithfully that of the curve relying on the most elevated points of the basis furnished by the experimental tests charted in Table 1. The parabolic formula which we have adopted, and which is a formula of the maximum, that is, making clear the maximum power obtainable from a standard motor of given bore, is the following:

$$P = 0.000525\ D^{2.4}.$$

This gives in horsepower (*chevaux*) the maximum power obtainable from four-cylinder, four-piston motors, of which the bore is expressed in *millimeters*. The calculation of the power with that formula necessitates the employment of a table of logarithms, for which purpose we have calculated and compiled Table 2, which gives these results instantly from one horsepower up, the maximum power obtainable from internal combustion motor built according to standard practice, given the diameter of the bore.

Electric cabs in Berlin provided with Hagen accumulators run on an average 37 miles per day and have to be charged twice. *L'Industrie Electrique* gives the cost of working as follows: Energy, 4.25; maintenance of accumulators, 3; sundry repairs, 1.25; maintenance of tires, 4.38; making a total of 12.88 francs per diem. Average receipts per fare are 2.15 francs.

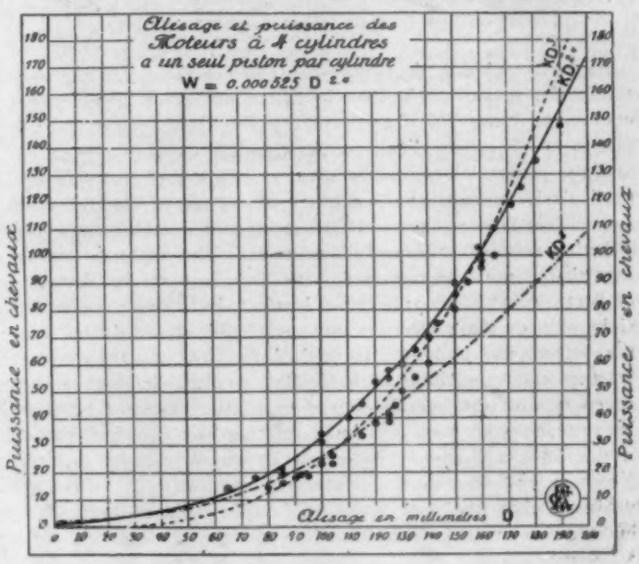

Alesage et puissance des Moteurs à 4 cylindres à un seul piston par cylindre
W = 0.000525 D 2.4
KD2
KD3
Puissance en chevaux
Alesage en millimètres

FIG. 3.

LETTERS INTERESTING AND INSTRUCTIVE

A Problem in Cylinder Lubrication.

Editor THE AUTOMOBILE:

[538.]—I am a constant reader of your valuable paper and have derived many benefits from your answers to your subscribers, and thought no doubt you could help me. I have a four-cylinder Ford runabout. The engine is splash lubricated from a force feed oiler. The oiler has only two sight feeds, one leading to the universal joint and the other to the crankcase. The latter feed pipe enters the crankcase in the middle, and should, I suppose, feed the same amount of oil to both pairs of cylinders, as the crankcase is divided into two compartments. This, however, is not the case. The first cylinder gets an excess of oil, the second a little less, and so on, and the last cylinder gets hardly no oil at all. Could you offer any suggestion which would remedy this fault?

Raleigh, N. C. JAS. J. THOMAS, Jr.

From our knowledge of the car to which you refer, we can scarcely bring ourselves to believe that the unequal lubrication you mention can exist with everything in proper adjustment, especially in view of the fact that we have never heard of a similar difficulty with any other car of the same make, several thousands of which are in use. What evidence do you find that makes you sure the trouble exists as you state it? Is there any serious overheating, or scoring of cylinders, or seizing of pistons? And, also, are you sure that you are using oil of a proper quality? The fact that there is only a single lead to supply the lubricant for the four cylinders has little bearing on the case, unless the lead is obstructed or feeding too slowly, since if there is enough oil in the crankcase its effective distribution to the different cylinders should be insured by the splash action alone, especially on level roads. On hills, with only the single crankcase partition, the distribution might be slightly less even than with the three-partition construction often utilized, but this effect is practically very well equalized in that you do not run continuously uphill or down, but alternate the two. Do you find the fault especially intensified in climbing long grades, and are you certain that you maintain a high enough level of oil in the crankcase?

Another Ambitious Young American.

Editor THE AUTOMOBILE:

[539.]—Kindly print in your valuable paper the answers to the following questions. I am a boy 16 years of age, and am trying to make an automobile. Can I use a marine motor in an automobile? The name of the motor is the "Little Skipper." If a boy had an auto that made at highest speed eight miles an hour, would he have to get a license? How can you get one, and does it cost anything? Could he run it himself? Will you kindly print a list of books on how to make an auto, with their prices?

New York. VICTOR J. CONDE.

As your ambition does not soar above eight miles an hour, the marine motor can be used in an automobile—if it has power enough to move the frame and running gear on which you mount it. The only difference between the usual marine motor and the automobile motor is greater weight and slower speed, particularly as most small marine motors are of the two-cycle type. This does not prevent its use on an automobile, however. Whether your car makes eight or eighty miles an hour, the law says that it must be registered, cost $2. Send to the Secretary of State, Albany, for application blanks. But if you are on the right side of the policemen in your neighborhood, better keep the $2 and say nothing. It is doubtful if your car will ever fracture the speed limit so badly that you will have to appear in court, and the average guardian of the law will be more interested in your success in building a machine than in inquiring if you have a license. No license to run it will be required. You may run it yourself, just as long as it will go. There are no books that treat specifically on how to build an automobile, but there are many which show how automobiles are built, such as Homan's at $2, which is probably the best for your purpose.

Specific Gravity of Anti-freezing Solutions.

Editor THE AUTOMOBILE:

[540.]—I am interested in the subject of anti-freezing solutions for winter use, and although I have closely followed everything that has appeared on the subject both in "The Automobile" and elsewhere, I have been unable to obtain the information I am seeking. I am familiar with the exact percentages required to prevent freezing at certain temperatures, but I wish to know what the specific gravity of these solutions is in order to be able to keep track of the condition of the mixture from time to time, as my car steams slightly when run steadily even in cold weather. For instance, a 25 per cent. solution of calcium chloride will withstand temperatures ranging from 10° F. to zero, and will freeze into a mushy mass, doing no harm, but unless such a solution is maintained constantly at this point it is apt to do damage by crystaling on the interior of the jackets, piping and radiator. As there is no way of calculating the amount of water lost by steaming, there is the danger of creating a hard deposit by adding too little water, and of overweakening the solution by adding too much, so that in the event of freezing, the very damage that is sought to be prevented is apt to occur. If the specific gravity of solutions of various strengths were known, it would be easy to keep track of their condition simply by dropping a hydrometer into them from time to time and adding sufficient water to restore it to the known standard. What I would like to know is, what is the specific gravity of solutions of calcium chloride in the proportions of three, four and five pounds to the gallon, also a saturated solution? Can any of your readers help me out on this, particularly with regard to the saturated solution? H. S. CHAPIN.

New York City.

Although data as to the temperatures at which solutions of water and calcium chloride of varying strengths will freeze appears to be plentiful, there does not seem to be any as to the specific gravity of such solutions. However, with the aid of a hydrometer there should be no difficulty in obtaining it with very little trouble. Take a glass graduate holding a pint or quart and fill it with water; if the former add a quarter pound, and in the case of the latter half a pound of calcium chloride, and the result will be a 25 per cent. solution. By ascertaining the number of quarts of water required to fill the circulating system of your car, it will be very easy to figure how many pounds of calcium chloride should be added to make a 25 per cent. solution. The specific gravity of a saturated solution can be ascertained in the same manner. A simple method of keeping track of the state of the solution without the use of a hydrometer would be to mark a line on the radiator reached by the solution when first put in. Whenever steaming caused the liquid to fall below it, sufficient water to restore it to the level indicated by the mark would be certain to maintain the solution at the required density. If any readers of THE AUTOMOBILE have had experience along the lines indicated, we should be pleased to hear from them.

Putting Away Storage Battery for the Winter.

Editor THE AUTOMOBILE:

[541.]—Will you kindly tell me if there is a dry storage battery made that can be charged with an Apple dynamo? I have understood that there is such a battery made, also if such a battery (if there is one on the market) would stand all winter and not be used could be charged in the spring without refilling. I have a storage battery in a four-cylinder car, and during the winter months the car is idle, as we do not have good roads to run on, and would like to know what is the best thing to do with a battery where it is idle for this length of time. D. T. DUKE.

Wellsville, N. Y.

There is no such thing as a "dry" battery of any kind, using the word in its literal sense. The so-called dry cell is only such in the sense that the active solution is held in suspension by means of some absorbent material, such as sawdust. The object of so doing is merely to eliminate the disadvantages attendant upon the use of a liquid, the efficiency of the cell being slightly impaired by reason of the fact that the solution cannot circulate, thus coming into constant contact with every part of the elements, as is the case in the wet cell. The same is true in the

case of the accumulator, except that what is commonly known as "water glass" (silicate of soda) is employed to prevent splashing. Sufficient of this is added to the electrolyte or acid solution of the cells to bring it to the consistency of a heavy jelly, somewhat like glucose. It is variously termed by makers putting out this type of cells as "solid" or "non-fluid" electrolyte, and its sole advantage consists of the fact that the solution cannot spill. On the other hand, the specific gravity of the solution cannot be kept track of, the efficiency is reduced for the reason already given in the case of the dry cell, and a longer time is required to recharge the cells when exhausted. On the whole, it is paying a rather high price for the single advantage mentioned.

Such a storage battery can be readily charged with an Apple dynamo or any other source of direct current of the proper voltage. As already stated, the only difference between it and the standard type lies in the use of a non-fluid electrolyte. No storage battery made can be put away for an indefinite length of time and impressed into service again whenever wanted without taking certain precautions. If they are omitted the cells are bound to be injured. They should be charged to their full capacity and then fully discharged at their normal rate until the voltage drops to 1.7. The electrolyte should then be dumped out and the elements washed in distilled or fresh, clean rain water and put away in a cool, dry place until wanted again. To put into service in the spring it is only necessary to fill with fresh electrolyte made from chemically pure sulphuric acid and distilled or rain water, testing it with a hydrometer to get the proper specific gravity. Fill the cells until the solution stands at least one-half an inch above the top of the plates.

What Causes Irregular Running Here?

Editor THE AUTOMOBILE:

[542.]—I read with much interest the article in your issue of January 3, written "By the Man at the Wheel." I have a French car, 24-horse rating, and have lately experienced a great deal of trouble with it. In starting the car when cold I find that only two or three of the four cylinders fire, and this difficulty is accompanied by a popping sound in the carbureter, indicating that the mixture is too poor. After the car is run for a few minutes and warmed up the cylinders seem to fire regularly, but the car is very prone to "lay down" whenever the throttle is open wide.

I have carefully examined the inlet and exhaust valves on starting the car, and find they all work freely, as do the hammers for the make and break. I have taken off the carbureter repeatedly and find I have a strong flow of gasoline from the end of the pipe leading into the carbureter, and the openings in the carbureter are clear and free from any dirt or foreign substance. I recently removed the carbureter from this car, and installed a carbureter from another car of the same make and power, which car runs beautifully. For twenty minutes after installing this carbureter my car ran perfectly, and then relapsed into the same way of running as it had with the other carbureter. The gasoline feed is by gravity, and I have carefully examined the small hole in the vent of the cap, which is not clogged up.

On opening the throttle suddenly the car will sometimes pop back, which would show there was not enough gasoline in the mixture, and at other times the car will "buck," which would indicate that the mixture was too rich. I have raised and lowered the float in every conceivable position, and have also adjusted the automatic air valve in a dozen or more different ways without seeming able to remedy the trouble.

As the matter now stands, my car does not run nearly as well as it did, and there is not much pleasure in driving a car which you know is not behaving properly. I would be very glad to have you suggest a remedy in the columns of your magazine.

Passaic, N. J. "PERPLEXED."

In view of your experience and that of the alleged "experts" who have attempted to arrive at a solution of the cause of the trouble outlined in your letter, you will be able to appreciate that it is doubly difficult to attempt to diagnose such a case at long range. We think, however, that you have made a mistake common to most autoists under the circumstances, and that is in jumping at conclusions. You have adopted a hypothesis and assumed it to be true, and have continued to work along the same line so long that you have come to regard it as true and as if nothing else could be at the bottom of the trouble. For instance, you say, "the car will sometimes pop back, which would show there was not enough gasoline in the mixture, and at other times will 'buck,' which would indicate that the mixture was too rich." While we cannot exactly grasp the significance of "buck" in this connection, we presume you mean that the motor loses power, or fails to carry the load when the throttle is opened. But there are few, if any, conditions of running that are infallibly indicative of a certain cause, such as your conclusion that the popping is due to a weak mixture, or that the "bucking" is the result of a reverse condition. The majority of autoists fail to realize within what extremely wide limits of mixture the engine will work satisfactorily once it becomes warm enough to insure ignition, and are all too prone to ascribe uncertain working to the mixture. If the motor has been running a sufficient length of time to get warm, it will usually ignite mixtures far too weak or too rich to start on, though the power will be decreased in either case and the fuel consumption be greater in the latter.

Judging from the data you have given, the trouble appears to be more apt to lie in a poorly fitting valve or valves, or a leak in the inlet manifold. A valve may leak in such a manner that at times it permits considerable of the compression to escape and at other times does not. When it does it will drive all mixture out of the manifold and carbureter issuing at the air inlet of the latter with a popping sound. For instance, cylinder number one has just fired, but on its compression stroke it has emptied the piping system so that cylinder number three, which is next in order, receives no charge and misses. It will then depend on whether the system recovers sufficiently in the interval to supply cylinder number two with enough of a charge to fire at full power. On the next round cylinder number three may inspire sufficient charge to fire, and then the compression of the explosion escaping through its leaky inlet valve will rob cylinder number two of its charge, thus causing the miss to apparently jump all over the engine in a most puzzling manner. Without further knowledge of the conditions, we should suggest an inspection of the valves to see if they require grinding in. Placing the car close to the manifold where it is fastened to the cylinders will reveal whether there is any escape at those points.

More Light on Average Current Consumption.

Editor THE AUTOMOBILE:

[543.]—I fear that there is one point in particular little understood by the automobilist, and that is, that the battery consumption is the same at all speeds of the car. The general impression is that, as the spark is advanced or as the speed of the car increases, so does battery consumption. In a four-cylinder car, for instance, the time of contact for each cylinder is approximately 1-12 of a revolution. There being four contacts, the actual time of contact is one-third of the time run; so that if you drive your car for one hour it is equivalent to turning your switch on and letting it run for 20 minutes. For a two and one-cylinder car it would be practically one-half or one-fourth of the above, although the time of contact for each point is greater on a one and two-cylinder car than on a four. Is there any kind of solder and flux that can be used on aluminum? CLARENCE T. JONES.

Columbia, S. C.

We very much fear that instead of the majority of autoists being misinformed on the point in question, your own knowledge is somewhat at fault. However, this will depend entirely upon the meaning you intend to convey by the expression "battery consumption." If you mean that the amount of current required to cause the spark to take place in the cylinder regardless of the time of occurrence or rapidity with which it occurs, due to the increased speed of the motor, remains the same, this is quite correct. In other words, neither advancing nor retarding the time of occurrence nor increasing the speed of the motor causes the latter to draw more current *per spark* from the battery. But it appears evident from the second paragraph of your letter that you wish to convey the impression that regardless of the speed of the motor the total amount of current drawn from

the battery is the same. As you say, the time of contact is approximately one-third of the time run, but in the case of a motor running at 1,500 r. p. m. contact is made twice as many times in the same period as if the motor were only turning over at 750 r. p. m. Your error lies in assuming that the period of contact is always equivalent to a constant contact, or closed circuit on the battery, for that length of time. If this were the case the dry cell would be worthless for automobile ignition. Turning on the switch and letting the current pass through the coil continuously for twenty minutes would be equivalent to considerably more than an hour's running of the motor. The impulses, or current discharges from the battery, are intermittent, and even though the motor be run at a very high speed they are not equivalent to the current consumed by the same coil on closed circuit. But the higher the speed the more frequent they are and the closer they approach to this value, hence the current consumption increases with the speed. The same amount of current is required *per spark*, but there are twice as many sparks in the instance cited. Just what proportion the increase in current consumption bears to the speed is, however, difficult to state. Novel's solders for aluminum are 100 parts tin to 5 parts lead or zinc; or 1,000 parts tin to 10 or 15 parts copper or nickel; no special flux is mentioned. Another formula consists of one part aluminum, one part 10 per cent. phosphor tin, 8 parts zinc, 32 parts tin, all by weight. With this Canada balsam is used as a flux. Considerable skill is required.

The Origin of the Term Limousine.

Editor THE AUTOMOBILE:

[544.]—Can you tell us anything about the origin of the term "limousine," used to designate a type of covered-in automobile? We should like to know how the word came to be applied, when it was first used, and whence it is derived. Can you supply us with this information? Thanking you in anticipation of a reply,

New York. FUNK & WAGNALLS COMPANY.

The word "limousine" is of French origin and was originally applied to an open type of carriage body. A few years ago its significance was completely transformed, and it is now applied to any type of closed carriage which cannot be classed among such standard types as coupé, landaulet, omnibus, etc., whatever may be its form, dimensions, or number of places. The term "limousine" was first given to a new type of carriage designed by a Paris coachbuilder, a native of Limousin, one of the old French provinces.

A Time-honored Question Is Again Asked.

Editor THE AUTOMOBILE:

[545.]—Will you kindly tell me if there is any book published describing and telling how to care for a steam automobile? Also which is the freest from trouble and cheapest to operate, a gasoline or a steam automobile? I should judge the steamer would be best because it would be free from ignition troubles, but would like your opinion. LAWRENCE H. WRIGHT.

Freeport, N. Y.

We do not know of any work that treats exclusively of the steam automobile and its management, but Holman's book includes chapters on the various types of steam cars extant as well as those of former days, and goes into detail regarding them as well as the care they require. It is generally conceded that in the advanced form in which it is now employed, steam is more free from minor troubles than the gasoline motor. As a well-known engineer has expressed the matter, "it takes two hours to find out what the trouble is with a gasoline machine and five minutes to remedy it, whereas only a glance is necessary to see what is wrong with the steam plant, but two hours are required to put it right." The question depends wholly on your own views in the matter; if you are familiar with steam practice you will probably like it better than gasoline, and *vice versa*. But reliability has been brought to such a high point that you run very little chance of disappointment in buying a standard car of either type. As to relative economy, this is a hard question to answer; the steamer burns considerably more fuel per mile than the gasoline car of the same weight, the former only doing nine to twelve miles per gallon, while the latter covers fifteen to twenty-two or more. More lubricating oil is required for the gasoline machine, though in other respects there is probably no difference in the cost of maintenance.

Extent of the Gasoline Engine Demand.

Editor THE AUTOMOBILE:

[546.]—Will you kindly inform me where I can obtain information regarding the extent of the demand for gasoline engines? How many are made annually in the United States? To what extent are they used for farm work, for trucks, etc., for propelling boats other than launches, and on railways.

Toronto, Ont. GEORGE DICKSON.

We doubt if any definite statistics on this subject are available. The number of gasoline engines of small powers annually produced in this country for farm and similar work is very large, mounting up into the thousands, and though to a much lesser extent, the same is probably true of small marine motors now being made for commercial purposes, such as fishing dories and the like. Their use on larger vessels or railways is at the present writing more in the experimental stage than otherwise. The International Harvester Company, Chicago, Ill., might be able to give you some idea of the number manufactured for farm work.

WINCHESTER, VA., FIRE DEPARTMENT WANTS.

Editor THE AUTOMOBILE:

[547.]—The general requirements upon which bids are invited by the Winchester fire department from manufacturers of an auto hose truck are that it shall be capable of carrying a load of about 2,500 pounds above its body weight. This load includes the fire hose, men, ladders, chemical tank, axes, picks and buckets. A gasoline engine is preferred, either water or air-cooled, to have gear of 16 to 20 miles per hour on levels, to be operated on vitrified brick and macadam streets, few grades and not over 10 per cent.; to carry 800 to 1,000 feet of regulation fire hose, one chemical tank with 200 feet of chemical hose, with basket to hold same, two hand chemical tanks, conveniently located, one extension ladder and one solid ladder, two picks (or pikes), two axes, six rubber buckets and a running board at the back for men.

Small deviation from the above is permissible, and all bids and correspondence should be addressed to the undersigned as soon as possible. Bids should be accompanied with complete specifications and blue-print or photograph if possible.

Winchester, Va. J. FRANK EDDY & BROTHER.

A SUCCESSFUL HOME-MADE INSTALLATION.

Editor THE AUTOMOBILE:

[548.]—Noting the experience of your correspondent, letter No. 482, issue of November 29, in which he states that he always had trouble with the ignition system of his car and wishes to install a high-tension magneto, I will tell you of the success that I have had with the Apple dynamo, in order that others may benefit thereby. I fitted one of these little generators to an Elmore single-cylinder car nine months ago. There was a Pittsfield coil on the car already, and I did not disturb or alter it in any way. Nor did I use a storage battery. The dynamo is fitted with a three-inch friction pulley bearing directly against the flywheel of the engine, and when running up to speed delivers its output at 12 volts. I used two 6 c.p. lamps for the side lights and a tail light of the same size. The dynamo runs these three lights and sparks the engine at the same time. I use no storage cells nor dry battery, and have never had any trouble starting with the dynamo, nor has the outfit given me a moment's trouble since installing it. I trust this may help 482 as well as others in the same predicament.

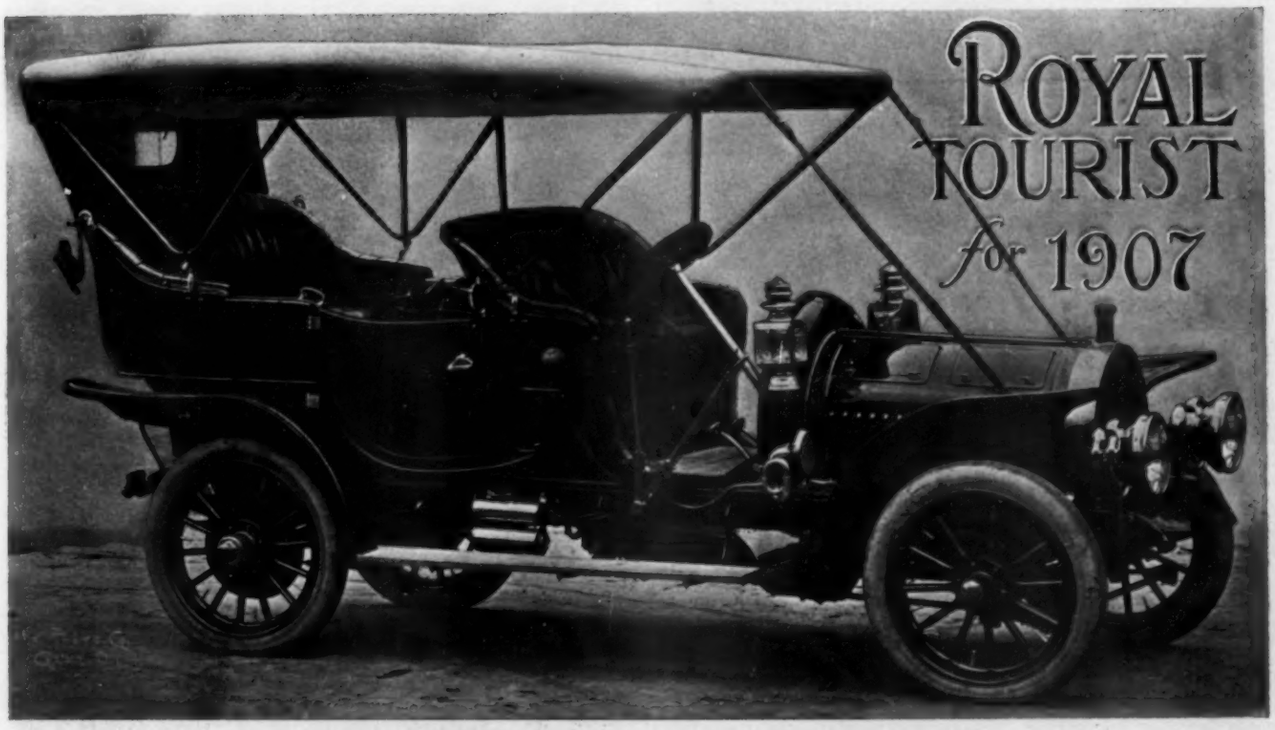
Corsicana, Tex. CLARENCE THOMAS (Auto Doctor).

FROM AN OLDSMOBILER TO OLDSMOBILERS.

Editor THE AUTOMOBILE:

[549.]—With regard to letter No. 517, re heating of the 20-horsepower two-cylinder Olds touring car, I have found from experience that these cars heat more in cold weather than in hot, because there is not sufficient steam vent given to the radiator. If the hood is taken off the car, and then a quarter inch hole drilled in the back of the radiator close to the top, the water will circulate and steam pockets will not form in the cylinders. W. F. H.

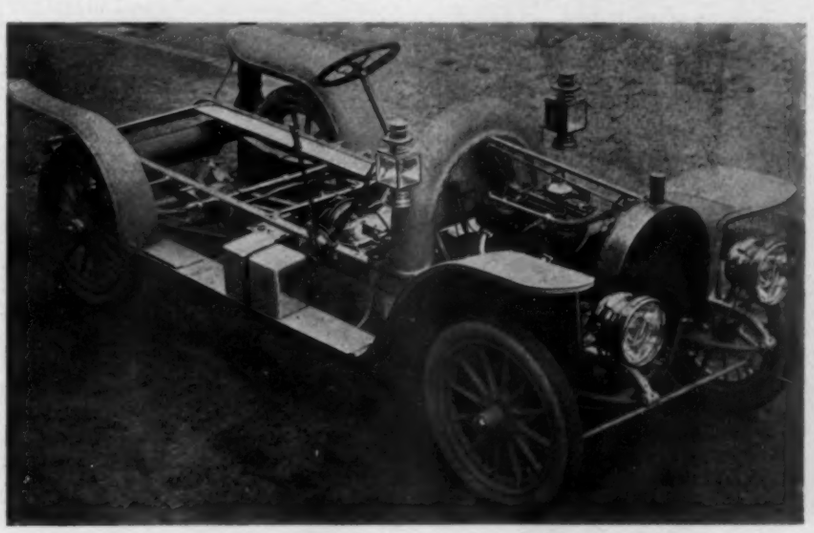
London, Ont.



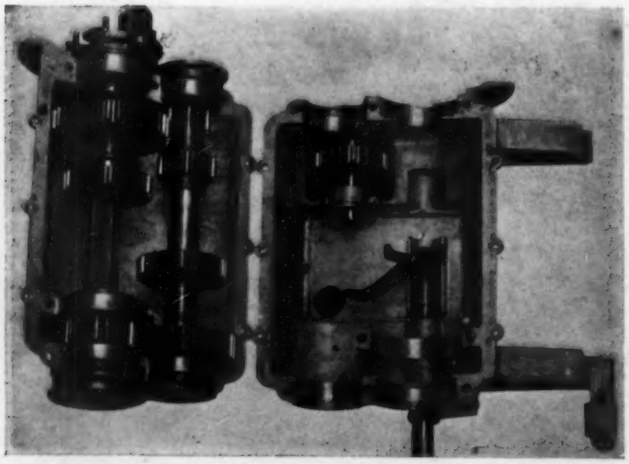
MODEL G, SERIES 2, ROYAL TOURIST, WITH KING OF BELGIANS BODY.

ADHERING steadfastly to the maxim about "doing one thing well," the builders of the Royal Tourist car have persistently stuck to the plan of specializing one type of chassis and one only, during all the time that this well-known car has been on the market. This is an age of specialization and the success that has followed the adoption of the plan of doing one thing well in the numerous lines in which specialists have scored, finds no exception in the case of the automobile. More than that, the builders of the Royal Tourist have appreciated the value of retaining the original outlines of a car which give it a distinctive character of its own and serve as a means of identification. For this reason not alone the outward appearance of the new model for the coming season but, at first glance, the motor, looks to be exactly the same as has always constituted a distinguishing feature of this car. This may seem to savor of extreme conservatism, but that this is not the case may best be judged from the close attention given to the matter of keeping abreast of modern design, as well as in adding exclusive improvements in the nature of detailed refinement to the motor and other parts of the chassis.

For instance, to summarize the improvements that distinguish the 1907 model from its predecessors, the motor, which is the four-cylinder vertical type, with cylinders cast in pairs measuring five by five and a half inches and developing 40 horsepower, originally designed by the Royal engineers, has been provided with stuffing compression boxes on the valve lifters to prevent leakage of oil or grease out of the cam pockets. All joints in the crankcase are scraped to a perfectly flat and true surface, so that no oil can be forced out of the crankcase; the end bearings of the crankshaft are provided with return oil ducts, so that oil from these bearings does not escape but is returned to the crankcase and is utilized for the splash lubrication of the pistons and big ends of the connecting rods. The camshaft gears are entirely inclosed, as is also the gear driving the magneto. Simms-Bosch high-tension magneto is employed, provision being made on the motor in the shape of a high-tension switch, so that either accumulator and coil ignition or magneto ignition can be used with the same set of plugs. An arrangement has been provided on the fan pulley in order to permit of tightening the fan belt readily. The belt itself is flat and is made of non-stretching material. The wiring from the magneto has been entirely inclosed and is so arranged that leakage of the current is practically impossible. Similar protection is given the wiring leading from the coil, avoiding the possibility of dirt accumulating under the latter. The motor and connecting rod bearings are of nickel-babbitt. For ignition a set of accumulators of greater capacity than were employed last year have been provided and the spark control has been arranged to work easier than was previously the case. An aluminum battery box



HOW THE CHASSIS LOOKS WHEN RELIEVED OF THE BODY.



TRANSMISSION EXPOSED, SHOWING DETAILS OF SLIDING GEAR.

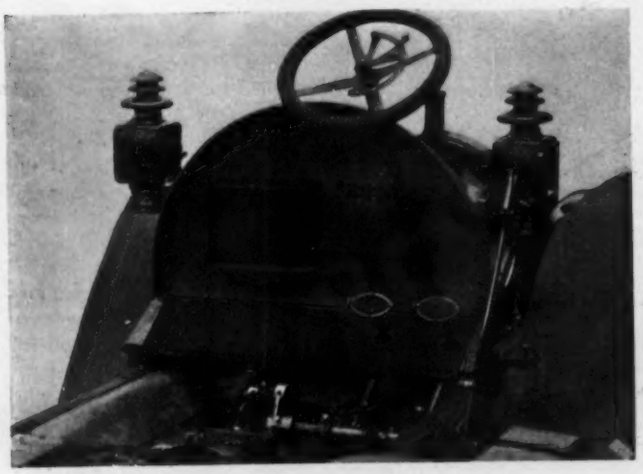
of substantial construction has been provided to house this essential.

The crankcase vents, or "breathers," have been carried further up in order to prevent oil being sprayed about on the inside of the hood.

Similar provisions to guard against the loss of oil from any of the moving parts is noticeable in the oil retainers on the change-speed gear box. This is an excellent feature, as it is noticeable that many cars drop far more oil on the road than they employ in the actual work of lubrication—in fact, the loss is so excessive from this cause alone as to be hardly credible.

Carburetion and Lubrication.—As the result of experiments carried out during the past year a new type of carbureter has been adopted for which greatly reduced fuel consumption is claimed under ordinary conditions of running, without at the same time raising this unduly when the maximum speed of which the car is capable, is desired to be maintained. It is of the customary float-feed, automatic, compensating type, with a spring-controlled piston type of auxiliary air intake. It is placed at the level of the camshaft, on the same side as the magneto, the use of a common inlet valve pocket on each pair of cylinders simplifying the manifold.

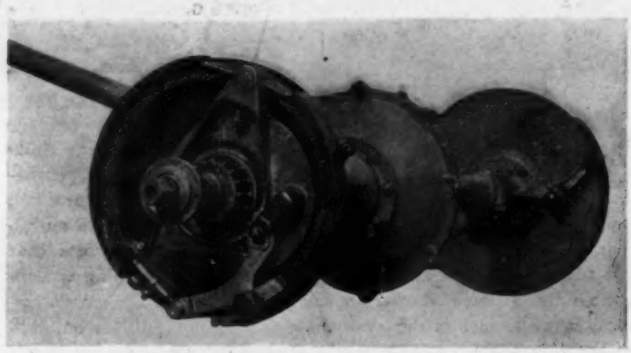
Lubrication is provided for by means of a McCord type of mechanical forced feed oiler, with independent leads to the principal bearings, the overflow dropping into the crankcase and aiding in maintaining the level in the latter for the splash lubrication of the pistons and connecting rod big ends, as already mentioned. The oiler itself is mounted directly on the dash, and with the addition of the coil box completes the fittings of the latter,



DASH, SHOWING THE FEATURES OF OPERATION.

which presents an unusually neat and unencumbered appearance. They are supported on brackets formed on the dash itself. The arrangement of the oiler on the dash is such that none of the oil pipes are exposed to view, which prevents any leakage of oil onto the footboards or floor of the car. Both the footboards and the floor of the car are made in such a manner that they will not lose their shape. They are covered with rubber of a better grade than is generally employed for the purpose, and provision is made for its easy renewal in case of wear. The muffler is of an improved type, placed transversely across the rear of the car, and is easily dismounted and taken apart for cleaning.

Transmission and Drive.—An improved form of clutch pedal, the metal surface of which is covered by a soft rubber pad, has been adopted. This reduces the danger of the foot slipping off the pedal, the rubber being easily replaced when worn so as to be no longer of service. The form of pedal and lever employed also avoid the necessity of cutting a large hole through the footboard, and give it a neater appearance. The clutch is a leather-faced aluminum cone of the standard type, that has always been a feature of Royal Tourist construction. Between it and the gear box a universal joint is placed, while there are two on the propeller shaft, all of them being made of forgings of a special grade of steel, which gives them about double the strength, without an increase in weight over those formerly employed. The joint at the rear of the gear box is readily accessible,

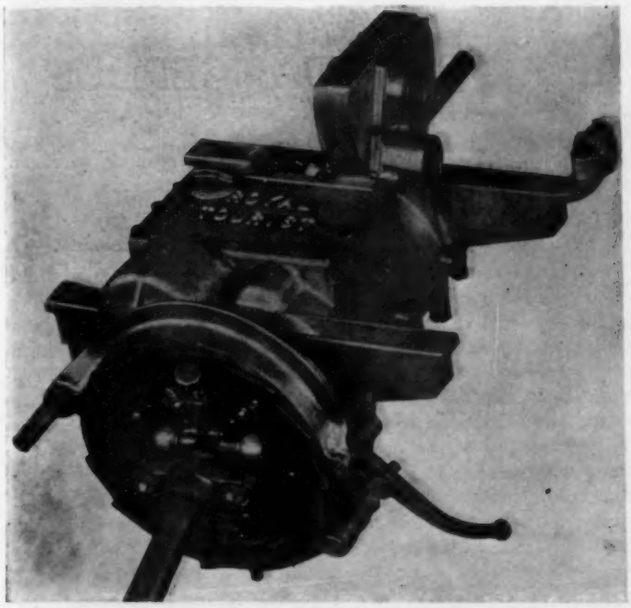


REAR AXLE, SHOWING BRAKE MECHANISM.

and is made in such a manner that it is constantly lubricated at every point.

The change-speed gear-box is of the straight or progressive sliding type, giving three speeds forward. A novel and cleverly worked out arrangement is provided for shifting the gears, preventing to a very great extent the clashing or rubbing of the pinions while changing. This gear-shifting device is mounted on top of the gear box itself, and is connected to the gear-shifting lever by means of a train of gears, thus making the movement positive. All the pinions, as well as the shafts, are of chrome nickel steel, and the same material is employed in propeller and rear live axle shafts.

Running Gear and Suspension.—The frame has been made of a wider and deeper channel section, and has been lengthened by six inches over that employed last year, beside which the strength of the frame has been increased by about 50 per cent., owing to the use of a much higher grade of steel. The front axle is tubular, of dropped shape, and has also been improved in this respect. Steering arms and steering knuckles on the front axle have been increased in weight, a higher grade of nickel steel being used in their construction as well. The axle bed is made of nickel steel tubing, increasing the strength in about the same ratio as the steering arms, which are approximately twice as strong as those previously used. Both the front hubs and the front wheel bearings have been designed to carry a heavier load, the former having been increased in diameter. The steering gear has been improved in detail, with a view to overcoming wear and its resulting lost motion in as far as possible.



UNIVERSAL JOINT, BRAKE, AND RATCHET SPRAG.

The tubing used in the rear axle is of nickel steel, while the rear axle differential housing is made of a drop forging of special high grade steel. The large casing to which the torsion rod is attached has been heavily reinforced, in order to guard against any possibility of deformation. The brakes consist of one of the external contracting type placed on the rear of the transmission. It is operated by the pedal, and is for running service. The drum is of large diameter, and has a wide face, the brake shoes being readily adjustable, as well as detachable for replacement when necessary. In addition, this brake carries a ratchet sprag drum and pawl designed to be brought into action from the driver's seat. The strut rods to the frame from the rear axle have been made heavier in every way, and the same is true of the torsion rod running from the rear axle to the torsion buffer. This is made of a special grade of steel, and is twice as strong as the standard formerly adopted for this element.

HOW A ROYAL TOURIST LOOKS FROM THE FRONT.

This rod is drawn into the rear axle casing through a taper hole, making it impossible for the strain to gradually cause the rod to work loose. The rear brakes are of the internal expanding type, working on drums bolted to the driving wheels, and have been designed with such liberal proportions as to enable the rear wheels to be locked with the ordinary pressure on the hand lever, which has been improved by making it of the pull-up type, instead of requiring to be pushed forward to apply it. This is an apparently minor and trivial improvement in itself, but it demonstrates to what an extent attention has been devoted to improving the car in every detail. Some designers object to this method of application, on the ground that it spoils the appearance of the car by keeping this lever always in a forward position instead of vertically when at rest, as is the case in many instances. The rear brake shoes are also readily removable, to permit of replacing the liners in case of excessive wear.

For suspension, semi-elliptic springs of ample proportions are used on both front and rear, the spring clips employed on both axles being of an improved type, designed especially to hold the spring firmly on its seat, with a view to avoiding the possibility of the spring being loosened through constant bending, resulting sooner or later in its breaking. The running boards are brass bound all around, making them very neat in appearance. A full twelve inches has been added to the length of the tonneau, making it that much longer than any body previously fitted to these cars. This permits of the use of two extra folding seats, which provide ample accommodation for the average sized person, but which fold into very small compass when not in use, the extra length giving plenty of foot room to all the occupants of the tonneau. A coat rail is provided on the rear of the front seat, and suitable handles have been placed on the front seat and side of the body in order to make it unnecessary to put any weight on the side door when entering or leaving the car. The hinges of the doors have also been made heavier and of better material. The wheelbase has also been increased by four inches, making the car that much longer than its predecessor. In order to thoroughly protect every part of the mechanism from flying mud and water, pans extending rearward from the front end of the motor to the rear of the transmission case have been provided. They are bound with leather to prevent rattling, and are made fast to the frame with a number of wing nuts, so as to be readily removable for cleaning. They are so arranged that adjustments can be made on any part of the car without the necessity of disturbing the pans. No pains have been spared to make the upholstery and finish representative in every respect of the highest stage of the carriage maker's art. The mudguards have been improved by the addition of a deflecting strip running around the outside, throwing mud and water downward and stiffening the guard itself. The makers of the Royal Tourist operate their own body factory, which is one of the most complete in the country. Any body equipment that the purchaser desires can be furnished on the chassis described above, known as Model G, Series 2. In addition to the semi-oval outline of radiator that has always been a distinguishing mark of this car, a further means of identification has been added in the elongation of the filler vent.

A curious motor wheel is reported as giving satisfaction in England. The tire is compacted of a peculiarly tanned and waterproofed pigskin, dovetailed into a rim. It is therefore a solid tire; the leather wears on its edges, and is said to be almost like horn in hardness. Road shocks are absorbed by the hub, which appears to be a box full of small steel balls surrounding the axle. These slip so readily under sudden impact that the bearing is almost liquid in its mobility, and, unlike a spring device, it gives no reaction. Just how the wheel maintains a center about the axle with the balls free enough to allow of eccentricity does not appear. Apparently the play is limited by tubes through which the driving bolts pass freely, but limit the maximum up-and-down movement. Presumably when running the whole matter is self-adjusting.

INCREASING THE DOSE IS APT TO BE DANGEROUS

PROCEEDING on the principle that what is beneficial in small doses is correspondingly more so as the quantity is increased, many autoists are prone to resort to the use of additional cells of battery when, after considerable tinkering, they have been unable to get the coils in proper working condition. Just as powerful poisons may be taken in minute doses with good results and an excessive quantity seldom fails to prove fatal, so an excess of current above the limit for which the particular make of coil has been designed, is more apt to bring about its ruin than to restore the ignition system as a whole to that efficient state of working which is the object of the investigator in applying the remedy. Among the not very lengthy list of "don'ts" which the manufacturer of coils has compiled for the benefits of the users of his apparatus, this particular "don't" is written large. Yet, one after another, autoists will continue to travel the same road toward that expensive goal of experience, and in the majority of instances without realizing what they have done to end the working days of their coils until the secondary windings of the latter have been rehabilitated.

Despite the fact that the "innards" of a coil are regarded very much in the light of a mystery by the average man for the simple reason that they are never exposed to the public gaze, the why and wherefore of this particular reason for destroying the coil's usefulness is not difficult to understand. Technically speaking, the induction coil such as is used on nine cars out of ten is a step-up transformer—in other words, if a current of low tension such as is produced by a dry battery or a set of accumulators, or a small direct-current dynamo, is passed through its coarse or primary winding, a current of high tension or voltage will be produced in the fine or secondary winding. And by fine in this case is meant exceedingly fine, for the secondary windings of high grade coils are composed of 36 gauge cotton or silk-covered copper wire, and this, even with its silk insulation, is of scarcely greater cross section than a horse hair and is twice as delicate. It will be evident that the current-carrying capacity of such a wire is almost infinitesimal, and that an excessive increase over its rating, as calculated by the maker of the coil, is bound to either burn the wire or break down the resistance between the layers.

What the Addition of an Extra Cell Means.

"But," says the average automobilist, "how can the addition of one cell be considered excessive?" In the case of a dry cell this means but 1 1-2 volts, and of an accumulator but two volts. Such a query is naturally indicative of a lack of knowledge of the fundamental principle upon which the induction coil or transformer is based. This is the fact that the potential or voltage of the induced current is dependent, not alone on the proportion that the number of turns in the secondary winding bears to that in the coarse or primary winding, but also on the voltage of the current supplied to the latter. For instance, on the average coil for automobile use, the coarse or primary winding which is placed next to the iron core consists of two or three layers of No. 14 or 16 B. & S. gauge insulated copper wire. Assuming that in those layers there are fifty turns of wire round the core, and that in the fine or secondary winding there are 10,000 turns, then a current sent through this primary winding at a potential of six volts—that generally adopted for ignition purposes—would result in the stepping up of this pressure to one of 12,000 volts. These figures are naturally not those actually adopted by coil makers, but are merely assumed for the purposes of illustration. In the case supposed above, where the autoist who has decided that more battery power is the only remedy that will produce satisfactory ignition, adds another cell of storage battery to his ignition set, this merely raises its voltage to 8, instead of 6, but the extra 2 volts, when they have passed through the multiplying process of the turns of the secondary winding, mean an increase of approximately 4,000 volts, taking the ratio between the two windings as 1 to 200.

Why Extra Cells Endanger the Coil's Efficiency.

From this it will be at once apparent that the simple addition of an extra cell involves far more than an increase of two volts at the primary. It must further be borne in mind that insulation is the prime requisite of the secondary winding of the induction coil, and that when this is calculated to stand the potential resulting from passing six volts through the primary any increase in the latter is bound to overstep the limit placed by the maker on the capacity of the insulation of the fine windings to withstand the tendency to jump between windings or between adjacent layers. Just as a chain is only as strong as its weakest link, so the coil is no stronger than that part of it which presents the least resistance to the current, and in such a number of turns of fine wire there are bound to be numerous weak points, despite the greatest care exercised in the winding and insulation.

The danger is not merely in the number of cells employed, but in the voltage. For instance, four dry cells when new give approximately 6 volts, but, when nearing the end of their life, drop off somewhat, and it is then safe to add another, and the same is true of accumulators, except that when an accumulator has already dropped below a safe voltage it is not a good plan to couple two sets in an attempt to raise the combined voltage to that required. If the voltage, tested when running, does not exceed 1.7, further use of the cells in any way will damage them. They should be recharged without delay, and it is only by recharging at frequent intervals that proper service can be obtained from an accumulator. It is not to be denied, however, that adding an extra cell, and thus raising the voltage to 8 or more, will sometimes prove effective by improving the ignition to an extent that permits of running the car where this was not possible with the original number. But it only goes to show that there is a defect in some part of the system, which, if corrected, would do away with the necessity of raising the voltage. In the meantime the extra strain imposed upon the coil is apt to puncture the insulation, reducing the efficiency of the coil to a point where it is practically useless by reason of the windings that have been cut out, or ruin it entirely.

SOAP AS A FIRST AID TO THE INJURED.

Injured in this case does not necessarily mean the autoist himself, unless the liberal coating that is said to be best described "as matter out of place" may be considered an injury. But vibration and excessive jolting frequently bring about a leak in the unions of the fuel pipe that no amount of tightening suffices to eliminate. No matter how slight the drip, if it be constant, it means that fuel is being wasted faster than the engine is using it, and where there is any question as to the supply holding out a repair is imperative. The simplest, as well as the most efficient, way to accomplish this is to shut off the fuel at the tank, or at any point between the tank and the union to be operated upon. Unscrew the latter, wipe the threads, clean and smear them liberally with soap. A piece of soap dragged across the threads will serve to fill them, which is the object desired. Other substances than can be used to equal advantage for this purpose are graphite, stiff tallow, or red lead mixed with glycerine. In setting up piping it is customary to use red lead mixed with linseed oil, but as this sets with a cement-like hardness, its employment on the car is hardly to be recommended. Failing any of these materials, a tight wrapping of adhesive tape may serve as a temporary makeshift that will prevent further loss of the precious fluid.

HOTELS for AUTOMOBILISTS In FRANCE

BY

FRANCIS MILTOUN

THERE are three things demanded by touring automobilists: good accommodation for himself in the way of beds and baths (or at least hot water and plenty of it, hitherto a rarity in France), a good table (which need not be a country imitation of a Paris table d'hôte), and good garage accommodation for his machine. By this latter something more is meant than a backyard, uncovered shack where hens and chickens roost and all the débris of the establishment is thrown helter-skelter. France possesses, in general, all the hotel requirements of the automobilist en tour. This is not saying but that there are deficiencies here and there; but the country landlord in France tumbled to the fact, at a very early period, that there was a new class of traffic to be catered to and the accommodation that it demanded was something different from that which had been current before. Old court-yard inns, which had been dull and dreamy since coaching-days, were furbished up, the old stables were torn down or rearranged to give plenty of light and air, and a clean, dry place was furnished where the lordly touring car or the eight-horse runabout of the really happy tourist could find shelter and *tout ce qu'il faut.*

The *garcon d'écurie* of other days comes to know the requirements of automobilists, and instead of filling nose-bags for horses he fetches and carries water and *essence* and gives you a hand here and there to speed you on your way—and doesn't expect a franc tip for every pail of water that he brings you, either. He'll take five sous and be thankful.

With the hotel accommodation itself the *patron* has become used to serving meals out of hours—it's astonishing how frequently one is a half an hour or an hour late for déjeuner when touring, not of course because anything was wrong with the automobile. Oh, no! but because one missed the road. Mostly the hotel *patron,* who often in the country-side of France is *chef* as well, sticks to his old system of feeding you the *plats* of the *pays,* but occasionally, in the large towns, as at Arles in the Bouches du Rhône, at Nantes in the Loire-Inférieur, or even at Rouen in Normandy, he plans unwisely and gives the same sort of fare that is known variously as a "table d'hôte" and "cuisine française" in Vienna, San Francisco, New York, or London. This is where he makes a mistake, and though he may catch a certain amount of quick-touring strangers who think their only safety lies in patronizing a "swell hotel" he is not as well advertised by his loving friends as the *patron* of the little inn around the corner whose clientèle is largely of the *commis-voyageur* class, and those travelers and tourists who know that his trail is that which leads to good cooking, eating, and drinking.

The general equipment of the French hotel before the advent of the touring automobilist, and before *"le tourisme"* became popular in France was a dismal affair, and its only spontaneous gayety was that awakened by its ample board with the good things of the table—food and drink alike—heaped high and served with a liberality and a local flavor which gave a new zest to each meal taken a dozen kilometers from where the last was eaten.

Evolution of the French Hotel.

Things don't move so slowly in France as is often supposed, though in the hotel line the high, coffin-like beds, with their overhung baldequins and stuffy window hangings, have been slow enough in disappearing in some parts. Until very recently, and now they are not many, there has been an utter absence of a sitting, writing or reading-room in the country hotel in France. In the days of the poste-chaise and the malle-post travelers were of an exclusive and aristocratic class, and wealthy withal—the poor folk didn't travel, or if they did a *"loge à pied"* was good enough for them, and they furnished their own provender.

The hotel travelers had their own special apartments where they lived and lodged and ate apart, much as they did in their own homes. They had no need of a public sitting-room, and they summoned the patron to them to present his bill in person, and in general put on much side and made themselves conspicuous. For this reason no public rooms, save the *salle à manger,* have until recently been found in provincial hotels.

With no accessible or comfortable room in which to sit or write, most travelers in France stifle or freeze themselves, according to the season, in their heavily-curtained, brick or tiled-floored bedrooms or hang wearily about the corridors waiting for the hour of table-d'hôte at 7 or 7:30 o'clock. The *commis-voyageur* or the French commercial traveler, knows better how to utilize his time. He deposits his bags and traps in the hotel when he has finished *"les affaires"* and goes to a brilliantly-lighted, warm, comfortable café, which may or may not be a dependency of the hotel. Here he writes his letters, drinks his *apéritif* (his appetizer, which, by the way, is far behind a cocktail) of whatever of the sticky, varnishy concoctions he affects—a *"Pernod,"* an *"Amer,"* or a *"Dubonnet,"* and is happy and genial through all of it and ready for his dinner when the time comes.

The last decade has brought many changes in the French provincial hotel. The bedrooms are considerably less stuffy than they used to be (this in summer, for they are no less frigid in winter). The heavy repp curtains at the windows are disappearing and hot water comes—when you order it—in sufficient quantity to at least remove the surface dirt of a dusty two hundred kilometers. Formerly you got a shaving mug full, and not very hot at that. Yes, things are looking up in the hotel line in France, and the automobile is the reason for it.

THE OLD GARCON D'ECURIE.

The above is simply a fair, unvarnished résumé of the state of affairs in the majority of small towns in

France, where, by chance, one may be landed for the night; towns like Conches in Normandy, Noyon in Picardy, Agde in Pyrénées-Orientales or Gien on the upper Loire. In the neighboring towns, with no more pretense to importance often than themselves, the wave of progress has broken with much more force. At Moulins, on the Loire, in the Hôtel du Dauphin, with about all the modern improvements one can well add to an old fabric. The character and old-time charm is still there, but there is steam-heat and electricity everywhere, and a real bathroom with hot and cold running water. At Perpignan, a near neighbor of Agde, almost the same thing is true at the Hotel de la Poste, and the bedrooms are all *"chambres hygiéniques"*—which means that they have been installed according to the formula of the Touring Club de France, the most famous institution of the world for having the interests of tourists and the betterment of their accommodation at heart.

How the French Hotel Proprietor Is Being Educated.

The Touring Club de France has done a great thing in advocating the *"chambre hygiénique,"* though with just how much favor it will be received by all classes of travelers is a question. Many will not care as to whether it is clean, healthful and bright or not, the *commis-voyageur* does not seem to have any very pronounced views on the subject; and most French travelers sleep with their windows and shutters tightly closed; thus the element of light and air is often not a consideration. Others will liken the bareness and plainness of these rooms to a prison-cell, or at all events to a cubicle in a hospital; but even this latter must be admitted to have some considerable advantages as a place of healthful repose. This, after all, is what one wants, or ought to want, and accordingly ought to be willing to forego something to get.

For twelve years the Touring Club de France has been struggling towards its ideal—the betterment of the accommodation offered all classes of travelers, and the universal adoption of the *"chambre hygiénique"* has been one of its fondest dreams.

The *"chambre hygiénique"* has white lacquered walls, severely plain "bent-wood" furniture and a brass or iron bedstead. Throughout there is a lack of ornamentation which does not tend to a gracious home-like aspect, though it is a pity that the sleeping rooms of more Anglo-Saxon homes were not furnished on these simple lines rather than being crowded with the trumpery bric-a-brac, Japanese umbrellas and pampas plumes that one usually finds.

The Touring Club de France publishes explicit detailed directions as to how this novelty may be installed and distributes the information gratuitously to inn-keepers throughout the land. Furthermore, in many cases, it gives even more substantial assistance with regard to the outfitting. The ceilings, like the walls, are lacquered, and there are no mouldings or nobby gas fixtures to catch and harbor dust. The curtains at the windows are washable and so is the *descente de lit,* the little strip of carpet which covers the tiled floor in front of the bed. The *table-de-nuit* is a new idea of a useful article of furniture, and it, too, and the washstand, taboo the Eastlake, spindly-railed decorations under which a suffering people labored under Louis Philippe, Queen Victoria and Andy Johnson.

All this does not preclude an artistic ensemble by any means, though it takes some considerable influence to move the masses on such points, even in France, for with all their natural artistic sense the French are firm adherents of such conventions as have been instilled into them since the horse-hair and plush horrors of the Citizen-King.

The *cheminée,* or fireplace, plays a grand rôle in the ventilation of a sleeping apartment, and where one exists, says the Touring Club formula, it should be allowed to perform the functions of drawing a *courant d'air* from an open window. The table tops, etc., throughout are of marble, real or artificial, and all bed hangings are abolished.

As for the French beds themselves something new was manifestly demanded to replace the stuffy upholsterings and cabinet work of those abominations which were the despair of the lover of airiness and cleanliness. An iron and brass model of a bedstead has been approved by the T. C. F. It has no ridges, ledges or crevices to harbor dust *and things.* In France seldom, if ever, were the beds unclean, except for the soil incident to ages; but the thick stuffed *paillasse* of feathers, or more often wool, was certainly not hygiénique, no matter how frequently it was turned and pounded into a semblance of fluffiness.

Something soft to recline upon was necessary, no doubt, but an animal product is about the worst that could have been adopted. Cotton-waste, pine-shavings, corn-husks and sea-weed are all in use in the beds of France and possibly some sort of a combination of these things is what is required, but a sweeping change is due to be made from general existing conditions.

Again the Touring Club suggests that the *paillasse* and mattress be enveloped in a white or ecru sack, or covering, which may be readily lifted and washed. The bed-clothes, too, comport with the march of progress, and no one who cares a whit for his health and comfort thinks of sleeping under a heavy padded quilt, such as our grandmothers and great-grandmothers used to delight in making. What awful and depressing things they were, to be sure!

Now the up-to-date *hotelier* in France has his *couvertures,* light, warm and washable, and the great eider-down puffs (which the French, by some extraordinary process of reasoning, call *"couvres-pieds américains"*) are covered with a slip which is also washable, instead of a Japanese silk skin which soon becomes torn and, what is left of it, distinctly greasy.

The size of the wash-basin, and its accompanying water-jug even, is prescribed. This is a move in the right direction. The chocolate sets sold by department stores, at forty-nine cents for a little pitcher, a great cup and a tiny sugar bowl, are a very good illustration of what the appurtenances of a French hotel washstand used to be.

As for the cleaning of a sleeping room such as this, it is a very simple matter. No more general turnings out, such as the English maid-of-all-work delights in, if only for the discomfort it causes others; no more of the spring cleanings of New England housewives, which are equally disconcerting; a simple washing off by soap and scrubbing brush, and a drying off with a cloth is all that is required. An able seaman, who is usually very well versed in this sort of scrubbing, could do it quite as well as any *bonne à tout faire* that ever wielded a broom or a mop, though it must not be forgotten that the *femme de chambre* in France to-day is usually a *garçon de chambre.*

Since it is pleasanter to say good than ill of things, one may now turn to the glad side of the country hotels of France and be thankful, at any rate, that nothing quite so foul or disgusting is ever seen in a French inn, as the supply of carpet slippers which the English inn-keeper keeps on hand for the general use of the none too fastidious English bagman who patronizes his establishment and drinks whiskey and soda with his meals. The French *commis-voyageur* may have his bad habits (straining his soup through his whiskers and guzzling his food aloud are two of them), but nothing that one sees in full view is quite as bad as that almost universal custom of his English confrère.

The foregoing outline has been made as brief as possible, and that a considerable effort has been made on the part of concurring hotel keepers in France to meet modern exigencies at least half way is the best proof that the fast-growing automobile clientèle is not being ignored. As the report of the Touring Club de France has it:

"La propreté de la chambre et du lit est le premier et le minimum des désiderata auxquels nous avons droit." (Cleanliness of the room and the bed is the first and the minimum desiderata to which we have a right.)

The Touring Club de France has not stopped there; it has furnished freely and gratuitously plans and projects for the installation of modern sanitary arrangements, and has even been known to establish and pay for a model accessory of this sort where it was badly needed and where it was thought to be a

good example to others. All these innovations—practically all brought about by the advent of the automobile—scattered though they be all up and down France, have had an undeniable influence for the better on the hotel industry here. Given two hotels, one with these modernities and the other without, and the automobilist and other travelers, too, will patronize the former if they only know which is which.

Twelve hundred hotels all over "la belle France" have given adherence to these new ideas of the Touring Club by taking its admonitions to heart. All this is set out in the Touring Club's "Annuaire" or Hotel List with great completeness, and the Automobile Club de France in its "Annuaire de Route" gives similar information, rather less completely, though rather ingeniously. Here one finds a little silhouetted knife and fork and an old-fashioned bedstead, indicating a good table and good beds. A good idea this which all guide-book makers might adopt, with a still further elaboration, to the benefit of their clientèle.

French Guide Books Give Useful Hints.

The Guide-Michelin, issued by the great pneumatic tire manufacturers of Clermont-Ferrand, do the thing with considerably more completeness, all by means of little typographical signs and indices—which look Greek to the uninitiated, but which are a veritable way-about-courier to those who know their real meaning. One, two or three stars (* ** ***) shows that the price which one may expect to pay per day (*tout compris*) is nine or less, eleven, or thirteen or more francs. If wine is not included in the price (and very seldom is it not) the letters *v. n. c.* (*vin non compris*) appear. This is all one needs to know as to prices. Now for the rest: A little square black spot means a dark room for photographers, a figure 6, 8 or 10 in a little square indicates that there is ample garage accommodation for the prescribed number of automobiles, a sort of capital U that there is a fosse or inspection pit, and "Ess" and "H" mean that *essence* and *huile* can be had on the premises (gasoline and oil). These latter commodities will cost you something more than they will at the grocer's around the corner (don't forget that, Mr. Tourist, if you are running a high-powered car with a voracious appetite). On the other hand, the hotel proprietor expects you to "buy something" to help him out on the expenses of the up-keep of his free garage. Buy ten litres of *essence*, if you like, or a two litre bidon of *huile;* he will be satisfied. Finally a jagged electric-spark-looking sort of a mark indicates that accumulators may be charged on the premises.

They go further than this, too, when it comes to the hotel accommodation itself. Ch. hyg. means *"chambres hygiéniques,"* and S. de B. (salle de bains) a bathroom, and W. C. the obvious thing, with this in addition, when it deserves it, *bien tenu et perfectionné dernièrement*—this really means something in France.

The initials T. C. F., A. C. F. and A. G. A. indicate that the house is affiliated or endorsed by the Touring Club de France, the Automobile Club de France, or the Association Générale Automobile, and if you are a member of the first-named (write to the headquarters, 65 Avenue de la Grande-Armée, Paris, for particulars as to membership, the fees of which are nominal) as like as not you get a discount of ten per cent. from your bill for having favored the hotel with your patronage. This is enough to pay one's tips.

One notes the panels of these great touring organizations all over France, usually posted prominently on the façade of the hotel, and with these as a landmark, and any of the three guides or route books before mentioned to place their location, one is bound to know beforehand just what one may expect to find and what one is likely to have to pay for it.

There are three classes of country hotels in France, not counting the purely resort hotels, patronized by the automobilist en tour; the frankly country, market town hotel, such as you find at St. Remy-en-Provence, Auray, in Brittany, or Louviers, in Normandy, where you literally stable your machine along with the market wagons, country carts and what not. Then there are the hotels of the *sous-préfectures*, like Evreux, Bourges or Poitiers, where, if they are somewhat pompous, the hotels are still countrified and have not a suspicion of Paris about them, either with respect to their cuisine or their appointments.

IN PROVENCE. THE CHEVAL BLANC, ANGERS. ON THE SEINE.

TYPES OF FRENCH COUNTRY INNS.

Then there are the *grands hôtels* of the cities, such as Marseilles, Bordeaux or Nantes, where one pays from twelve to fifteen francs a day—*v. n. c.* in most cases.

Finally there are the "resort hotels" of Trouville, Biarritz, Nice or Aix-les-Bains, which are ultra-everything and where one pays anything one likes, wholly unattractive, so far as local color or character goes, either in their appointments or their cooking, being rank imitations of the real thing at Paris. *Vin* is never *compris* and you pay dear for what you do buy, and a franc and a quarter or a franc and a half for a bottle of vichy which you buy elsewhere for eighty centimes.

The two first-mentioned classes of establishments are the *vrais hotels du pays* and those of the last class are as like as two peas in a pod and frankly reminiscent of the Ritz in Paris, the Carleton in London or the latest skyscraping palace hotel of New York, at least so far as go the conventionalities, fripperies and the deadly staleness of full-dress dinners and teas on the terrace or in the palm room.

The best provincial hotel in France, all things considered, is the Cheval Blanc at Angers, a successor to a sixteenth century inn on the same site, with some modernities, but still possessed of a character which is distinguished, a comfort which is remarkable, and an excellence of cuisine which is a marvel.

Angers is a little beyond the beaten track of tourists in the chateaux country, but it is worth running down to just to put in a day at the Cheval Blanc and see how well a provincial hotel can be run and how wholly attractive it can be. Saumur, near by, runs Angers a close second with its Hôtel Budan. Champagne's only real rival comes from Saumur, and when you have stabled your automobile in the really luxurious little paved courtyard garage you will enjoy a bottle of it with your dinner. It won't cost you over five or six francs for the best.

A WELCOME GUIDE BOOK SIGN.

Tours, in the heart of the châteaux country, has a magnificent establishment, the Hôtel de l'Univers, whose proprietor is progressive enough to keep a fleet of automobiles for hire to tourists who do not bring their own. The Hôtel de l'Univers is to all intents and purposes a "resort hotel," though Tours is neither a watering place, a mountain resort or a gambling hell. This classification, however, puts the hotel out of the category of French provincial hotels. Its garage is quite the most palatial thing of its kind to be found in France and appears to have accommodation for half a hundred machines. The feeding here is not as good as the rest; one can do much better at a little *commis-voyageur* hotel (du Croissant), on a back street opposite the post-office; but not catering especially for automobilists, they cannot house more than a couple at a time, and one often has to board the machine out for the night.

Nantes, at the embouchure of the Loire, a one-time dignified provincial capital, was praised by a century-old traveler for its Hôtel de France. The hotel is still there and the date over its portal is written large—1796—but within a twelvemonth it has fallen from its previous character and become a pseudo de luxe hotel with a restaurant where you—being an automobilist—are supposed to eat and pay fifteen prices for everything. There is a "lounge" and no end of gold-braided lackeys hanging around doing nothing but getting in your way. Nantes needs nothing of this kind; it is not a city of a million inhabitants, and is not a resort, but merely a busy port and manufacturing ville, enterprising, substantial and wealthy, no doubt; but there is, as before said, no call for such a fell blow as has spoiled the Hôtel de France of other days.

(*To be continued.*)

FRENCH MARINE MOTOR KEROSENE CONTEST.

The competition organized by the Automobile Club of France for marine motors using kerosene as fuel, and intended for service in the navy, has just been brought to a close. The motor Cazes gained first prize, and will be bought by the Government. The Mietz & Weiss motor will also enter the navy. A new competition will shortly be organized by the Minister of Marine for kerosene motors, and next year an important competition for kerosene-driven motor boats to be used in protecting fishing craft will be held.

Automobile instruction will be specialized in the new *Arts et Métiers* college to be built near Paris. A three-year course will provide instruction in various arts and trades; the fourth year's course will be devoted especially to automobile construction and electricity. The college will cost $1,200,000.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows.

Jan. 28-Feb. 2..—Washington (D. C.) Automobile Show, Dupont Garage, Washington Automobile Dealers' Ass'n.
Feb. 2-9.....—Chicago Automobile Show, Coliseum and First Regiment Armory. S. A. Miles, manager, 7 E. 42d Street, New York City.
Feb. 11-16.....—Detroit, Mich., Sixth Annual Automobile Show, Light Guard Armory, Tri-State Automobile and Sporting Goods Ass'n. E. E. McMasters, mgr.
Feb. 18-23.....—Fifth Annual Automobile Show, Buffalo, Convention Hall. D. H. Lewis, manager, Teck Building.
Feb. 18-23.....—Cleveland Automobile Show, Cleveland Automobile Trade Association.
Feb. ..-.....—San Francisco, Golden Gate Park Skating Rink, Automobile Show, Dealers' Association and Automobile Club of California.
Feb. 25-Mar. 2..—Portland, Me., Second Annual Automobile and Power Boat Show, The Auditorium.
March 2-9.....—Chicago, Second Annual Power Boat Show, Seventh Regiment Armory. W. C. Andrews, manager, 19 E. Huron street.
March 2-9.....—Automobile Show, First Regiment Armory, Minneapolis Automobile Dealers' Association.
March 4-10.....—Kansas City, Mo., First Annual Automobile Show, Convention Hall. Frank L. Woodward, manager, Willis Wood Theatre Building.
March 9-16.....—Boston Automobile Show, Mechanics' Hall and Horticultural Hall, Boston Automobile Dealers' Association. Chester I Campbell, manager.
March 13-16....—Second Annual Automobile Show, Omaha Dealers' Association. Auditorium Bldg. T. Gillian, mgr.
March 18-23....—Providence (R. I.) Automobile and Power Boat Show, Infantry Hall. F. M. Prescott, manager.
April 1-6.....—St. Louis, Mo., Automobile Show, Jai Alai Building, St. Louis Automobile Dealers' Association.
April 6-13.....—Montreal, Canada, Second International Automobile and Sportsman's Exhibition. R. M. Jaffray, manager, 309 W. Notre Dame street.
April 8-13.....—Pittsburg, Pa., First Annual Show of the Pittsburg Automobile Dealers' Association, Duquesne Garden.

Race Meets, Hill Climbs, etc.

Jan. 22-26.....—Ormond-Daytona (Florida) International Race Meet, Florida East Coast Automobile Association.

Motor Boat Races.

Jan. 29-Feb. 1..—Palm Beach, Fla., Annual Races of the Palm Beach Power Boat Association.
Sept. 2-6.....—Jamestown (Va.) Exposition, Motor Boat Races.

FOREIGN.

Shows.

Jan. 25-Feb. 2..—Liverpool Motor Show, Tournament Hall.
Feb. 1-9.....—London, Crystal Palace Motor Show.
Feb. 16.....—Automobile Show, at Turin, Italy.
March 7-16.....—London, Olympia Commercial Vehicle and Motor Boat Show.
April 6-13.....—London, Agricultural Hall Motor Show.
May 1-15.....—Madrid, Spain, Automobile Exhibition, Palace of Fine Arts, Royal Automobile Club of Madrid.
May 15-26.....—Third Annual Swiss Automobile Show, Zurich.

Race Meets, Hill Climbs, etc.

Feb. 23-27.....—Voiturette Contest, Automobile Club of Italy.
March 20-27....—Nice (France) Automobile Week.
April 1-15.....—Spring Wheel Competition.
April 21.....—Targa Florio Tour (Sicily), Auto Club of Milan.
April 25-28.....—Touring Contest, Automobile Club of Touraine.
April 28.....—Chateau Thierry Hill Climb.
May 24-27.....—Voiturette Contest, Automobile Club of Austria.
May 29-June 1..—Irish Automobile Club Reliability Trials.
June 3-12.....—Herkomer Cup, Automobile Club of Bavaria.
June 14.....—German Emperor's Cup, Taunus Circuit, Imperial Automobile Club.
June 24-29.....—Scottish Reliability Trial, Scottish Automobile Club.
June 25-July 8..—Grand Prix, Automobile Club of France. (Exact date to be decided upon.)
Aug. 11-20.....—Coup d'Auvergne, France.
Aug. 18-22.....—Ardennes Circuit (Belgium) and Coupe de Liedekerke.

MIDWINTER ACTIVITIES OF THE CLUBS.

Characteristics of the Proposed Illinois Auto Law.

CHICAGO, Jan. 21.—Throughout Illinois automobilists are lining up to support the bill introduced into the State Senate by Senator Humphrey, and will make a hard fight to put the measure through. Two years ago a similar law was passed by the Legislature and vetoed by Governor Deneen. This session it is hoped to prove to the Governor that public sentiment is favorable to fair play for automobilists. The bill was drawn up by Secretary Sidney Gorham, of the Chicago Automobile Club, and will receive the backing of that powerful body and Chicago Motor Club, which, though only recently formed, has achieved an enviable reputation for energy and push.

The most important features of the Humphrey bill are the clauses fixing speed limits throughout the State at twenty miles per hour in the country districts, fifteen miles for the cities, and ten miles per hour in congested business centers; registration by the Secretary of State, who on payment of a $2 fee will issue numbers and tags good in any part of the State. Speed limits in municipalities less than the marks fixed by law and local licenses and numbers are abolished. It is provided that every car shall carry for from one hour after sunset to one hour before sunrise at least two lighted lamps showing white lights visible at least 200 feet, and one red light in the rear. Cars must be provided with good brakes and a bell, horn, or other signaling device.

Another clause provides that any person driving a motor vehicle in a race on a public highway shall, upon conviction, be fined a sum not exceeding $50, and still another clause provides that automobilists shall, at request, or upon signal by holding up the hand or otherwise, from a person riding or driving a horse or horses in the opposite direction, cause the motor vehicle to stop and remain stationary, and shall, if requested, stop the engine of said motor vehicle so long as may be necessary to allow said horse or horses to pass. Special registration of professional chauffeurs is provided for, the fee for same being set at one dollar.

Friday Evenings at Long Island Automobile Club.

BROOKLYN, N. Y., Jan. 22.—There is always "something doing" on Friday evening at the home of the Long Island Automobile Club. The most recent announcement of the entertainment committee includes the following: Friday evening, January 25, exhibition of 1907 cars—Ford, Thomas and Stevens-Duryea—music and refreshments; Friday evening, February 8, smoker and vaudeville show; Friday evening, February 15, exhibition of 1907 cars—Oldsmobile, Matheson and Dragon—music and refreshments; Friday evening, March 1, smoke talk, etc., and on this occasion A. R. Pardington, vice-president and general manager of the Long Island Motor Parkway, will tell all about that notable enterprise, and the progress that is being made; Friday evening, March 15, vaudeville show. The regular monthly meeting will be held Wednesday evening, January 30.

Theft Rouses the Grand Rapids A. C. to Action.

GRAND RAPIDS, MICH., Jan. 21.—Recent cases of aggravated automobile thefts and slashing of tires have awakened the Grand Rapids Automobile Club to action, and the latter has now determined to put a stop to the practices. The first step in the agitation is the offering of a reward of $50 for the persons who stole the car of W. S. Gunn from in front of his residence and later deserted it. The large number of cars in Grand Rapids has made it exceedingly difficult to locate a stolen one, but business men and automobile owners alike are determined that the marauders shall be captured and summarily dealt with.

California Claims the Pioneer Woman's Auto Club.

SAN FRANCISCO, Jan. 16.—The recent organization of a women's automobile club in Philadelphia has awakened public attention to the fact that California, and this city in particular, claims priority in the forming of an auto club composed entirely of the fair sex. The president of the California Woman's Automobile Club, Mrs. J. A. Marsh, to support the contention, makes public the history of the organization, as follows:

"The club was organized on October 4, 1905, at my home. After the second meeting we secured quarters in the California Women's Club, where the meetings were held thereafter. We had exceedingly pleasant rooms and were thinking seriously of securing a building of our own when proceedings came to an abrupt stop in April of this year, in consequence of the great disaster which overtook our city. The first run of the club was to San José. There was a large attendance, and at that meeting the membership was almost doubled. The club had also under consideration the scheme of short picnic runs that could be held in a day.

"For the present the officers of the club are preparing to hold the annual meeting in January. At that time we shall elect officers for the year and lay plans for an active season. First there will be a series of luncheons at which papers will be read. These papers are to be prepared by members of the club and some of the well known men authorities in the sport. The men will not, however, be present, as the club bars the sterner sex from all its meetings. These luncheons will occupy the time between the annual meeting and the springtime, when the roads will again be open for driving. Then will come short runs of a day's duration until the latter part of May, when the officers plan to conduct a race meet, at which only women will be permitted to compete, and gymkhana games. The race meeting is to be followed by the annual vacation outing. This will occupy from one to two weeks. It will consist of a tour of the State. One of the objects of the run will be the establishing of clubs in the larger cities visited.

"If the race meet in the spring is a success another will be held in the fall. While the members are planning and taking part in the pleasures of the pastime they will not be forgetful of the hard work that is a part of the life of the club. At the monthly business meeting the members will plan for the improvement of the roads and for obtaining legislation toward that end. The matter of legislation is in the hands of the Automobile Club of California, but our organization is going to do its part in helping the work and in seeing to it that the laws are strictly observed."

Benefits of Organization Shown by Cleveland A. C.

CLEVELAND, O., Jan. 21.—Lack of enthusiasm which has marked club work in Cleveland in previous years is undergoing a radical change. One of the best evidences of this is the program mapped out by the Cleveland Automobile Club for the new year, and the great interest being manifested in the work as evidenced by the attendance at the smoker recently given by the club at the Hollenden Hotel. A goodly proportion of the membership and a number of invited guests were present. Addresses were made by a number of prominent automobilists. The trend of the arguments pointed to the great enlargement of the enjoyments of autoing which could be made possible through organization of those interested.

W. P. Sholes, president of the club, sounded the keynote when he said that the success of all movements in the busi

ness world were due to organization, system, and combination of effort. While astonishing progress has been made in the development of means of locomotion, the subject of road improvement had received little attention in this portion of the country, especially in Ohio. Not only in road conditions, but in laws governing the use of automobiles, is the Buckeye State deficient. The present automobile law is crude, insufficient, and narrow as compared with those in force in other States. Local ordinances in many communities are conflicting and embarrassing to local people as well as to tourists. In a number of portions of the State there have been efforts to improve roads, but the work has been spasmodic, and there has been a lack of uniformity.

In brief, he thought it the duty of the Cleveland Club to lead in the movement to secure better roads and better laws. To accomplish this the club must be made stronger. At present it has about 500 members, but he thought this was altogether too small, considering the fact that there are more than 3,000 owners in the city. He pointed out that the club had accomplished much good in the past, and had large plans for the future. He stated that about $10,000 had been pledged for the building of a stretch of model road east from Cleveland, and that the success of the movement originated by the club was now assured. The club has stimulated the organization of the Ohio State Automobile Association, and has aided in the formation of clubs in some of the largest cities of the State. Cincinnati, Columbus, Springfield, Ashtabula, Akron, Elyria, and several other towns now have good live clubs, while the Toledo and Dayton clubs promise to reorganize and assist with the work. He thought that a membership of 3,000 ought to be secured for the State organization without much difficulty.

During the Cleveland automobile show the Cleveland Automobile Club will hold open house in a portion of the Central Armory, where the show will be held. A suite of rooms off from the main exhibition hall has been set aside for the club, and it will be fitted with every convenience and comfort for the entertainment of visiting automobilists. Everyone will be welcome. There is talk that the club may decide to hold a banquet, to which all visiting automobilists and local owners will be invited. The club is sparing no legitimate means to build up its membership to a very high mark, and it is believed that these entertainments will have the desired result.

Buffalo's Plan for Chauffeur Bureau Outlined.

BUFFALO, N. Y., Jan. 21.—A plan, which it is hoped will do much toward effecting a satisfactory solution of the chauffeur problem, is being fathered by the Automobile Club of Buffalo. It possesses the merit of being comparatively simple in theory and one that is very easily carried out. Secretary Dai H. Lewis of the club has written the following letter, which fully explains the plan in detail to the secretaries of all the automobile clubs in the country:

"It has been suggested that if the various automobile clubs organized a chauffeurs' reference and employment bureau for the protection of members and also with the belief that it will inure to the benefit of the best class of chauffeurs by segregating them from the immoral and intemperate class; and it will also assist chauffeurs to obtain employment with the best employers, *i.e.*, members of the various automobile clubs.

"It is believed that if all the automobile clubs throughout the country will take up this serious question aggressively the morale of chauffeurs will be greatly increased and the chauffeurs' troubles will be largely minimized."

American Auto Tourists File a Protest.

NEW YORK, Jan. 22.—On the recommendation of the bureau of tours of the Automobile Club of America the board of governors of the club has passed the following resolutions protesting against the expensive crating of automobiles for foreign shipment required by transatlantic steamship companies, a matter that has been costing American autoists several thousand dollars annually:

Whereas, many members of the Automobile Club of America and owners of automobiles are desirous of taking cars to and from Europe; and whereas,

The expense of doing this is very great and such expense is increased by reason of the cost of crating, the drayage to and from the steamship, the use of cranes and lighterage; and whereas,

It is desirable that this expense should be reduced as much as possible; and whereas,

Automobiles are carried in Europe without being crated, it is

Resolved, That this club call the attention of the different steamship lines plying between this country and Europe to the fact that in its opinion the crating of automobiles, the charge for the use of hoisting apparatus and lighterage are entirely unnecessary and that the steamship companies be requested to make arrangements by which they will carry automobiles across the Atlantic without crating.

A. C. of Philadelphia Elects a New Treasurer.

PHILADELPHIA, Jan. 22.—At last week's meeting of the Automobile Club of Philadelphia, the vacancy in the treasurership and in the board of governors caused by the resignation of J. Maxwell Bullock was filled by the appointment of Jacob J. Leeds. H. Bartol Brazier, secretary, and G. L. Gundlfinger, assistant, were continued in office for another term. Isaac Starr, Jr., chairman of the committee appointed to establish a legal department, whereby all members who run afoul of the authorities may receive legal assistance and advice, was given *carte blanche* to complete arrangements therefor.

CLUB DOINGS IN GENERAL.

PHILADELPHIA.—The Quaker City Motor Club is considering the project of a hill climb for Decoration Day, which will be of national importance, open to all owners, dealers and manufacturers. There are a number of suitable hill courses in the suburbs, one of which will be selected.

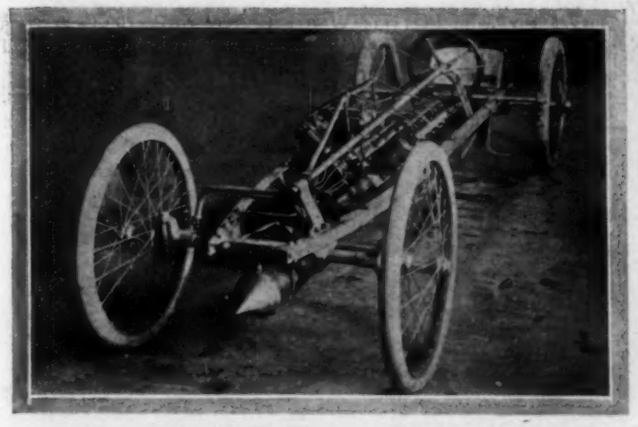
UTICA, N. Y.—Officers elected at the annual meeting of the Utica Automobile Club are as follows: President, George A. Frisbie; first vice-president, F. W. Sessions; second vice-president, R. B. Billings; secretary-treasurer, Robert M. Hunt. The club now has a membership of seventy-six.

BINGHAMTON, N. Y.—Fully twenty-five members of the Binghamton Automobile Club attended the auto show in Madison Square Garden last week. The club is particularly active this winter, and is mapping out a season's work for the coming summer that will give the organization great prominence in the work of highway improvement.

NEW YORK.—President Samuel B. Stevens, of the New York Motor Club, has appointed a committee, consisting of Prof. F. R. Hutton, Robert Lee Morrell, A. H. Rutherford, T. F. Moore and A. Schwalbach, to investigate the proposed automobile speedway along the line of the Catskill reservoir and report upon same with a view to indorsement by the club.

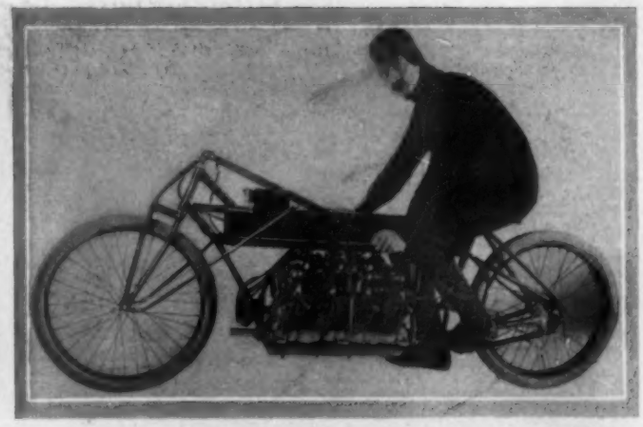
NEW YORK.—Thirty-two new members have been elected to membership in the Motor Boat Club of America since December 1. The club is considering the project of a long-distance race from New York to the Jamestown Exposition, by the outside course, at the time of the club's annual cruise to Hampton Roads, arriving there in time to participate in the motor boat carnival which opens September 2.

ST. LOUIS.—Speaking for the St. Louis Automobile Club, Secretary Roy F. Britton says that the organization will not go into the courts to test the validity of the present ordinance restricting the speed of autos to eight miles per hour in that city. The club believes that nothing can be gained by fighting the law, but believes that a more liberal ordinance should be enacted, raising the speed limit in driveways of the public parks to fifteen miles per hour.



THE HARROUN RECORD SEEKER AT ORMOND.

Has 8-cylinder air-cooled motor, weighs about 250 pounds, and has been successfully tried out on the Ormond-Daytona course.



CURTISS 8-CYL. MOTORCYCLE ALSO WANTS RECORDS.

Said to be the largest and most powerful machine of its type in existence—40 horsepower. This week at the Ormond races.

ON THE SEA-SWEPT SANDS AT ORMOND

By A. G. BATCHELDER.

HOTEL ORMOND, Jan. 22.—There won't be much of a story to tell of the doings this week on Florida's famous stretch of sand, and this a pity, for the weather is perfection, the program well planned, the officials experienced, and all indications pointed to a successful racing innings.

The reasons are several and the principal one is the presence of the Stanley steam sprinter, which appears certain to lower its world's mark of :28 1-5 at the first favorable opportunity. This abnormal auto racing craft qualifies for the game under liberal interpretation of the rules, but its superiority over the gasoline flyers stops at a distance under five miles. Of course the short distance performances of such a vehicle should rank second in worth to the prolonged high speed traveling of cars quickly converted to general use, but the more startling dashes of this steam space annihilator command greater attention in the daily press. Hence the gasoline makers have practically left the Ormond-Daytona meet to the Stanley and reserved their competition to events wherein sprints will not detract from the more valuable middle and long-distance struggles which call for speed provenly coupled with the characteristics of endurance.

Even the Darracq contingent, which a year ago conquered steam in the two-mile-a-minute star race, seems to have deserted the field after entering. At this writing the absence of Wagner, the Vanderbilt winner, looks probable, and though there may be trouble for him and his company with the racing authorities, dispatches involving the Florida East Coast Automobile Association, the American Darracq Company, and Chairman Thompson have not resulted in the assurance of the presence of the noted Frenchman in the 100-mile race scheduled for Friday.

There is available a fairly large number of touring cars of various kinds, and with these and the steam cars a program will be patched out to accompany the mile steam sprints, which, it is predicted, will be faster than 130 miles per hour. Monday Marriott did :38 3-5 without much effort, and the equanimity with which it was received contrasted vastly with the enthusiasm created by W. K. Vanderbilt's :39 of only two years ago.

January dates for a Florida meet are mighty inconvenient for many in the automobile trade, and both entry list and attendance are suffering from this fact. The Chicago show too closely follows the Madison Square Garden exhibition, and

FERRYING THE OLDSMOBILE FLORIDA PATHFINDER ACROSS THE ALTAMAHA RIVER, A CHARACTERISTIC GEORGIA STREAM.

FINDING WHAT PONCE DE LEON SOUGHT AT ST. AUGUSTINE.

those who must attend both cannot be lured to the "Land of Flowers" for such a brief stay, especially when for three years previous the weather has been of the most uncertain variety.

Up to the present time no records have been broken, as the course for the past two days was not in first-class condition, numerous small gullies having been left in the sand by the receding tides. In to-day's events E. B. Blakeley, a Harvard student, driving a Mercedes car, won the five-mile race for all classes of cars from a standing start. The other starters were: R. A. McCready, 20-horsepower Rolls-Royce, and H. E. Rogers, 25-horsepower Stanley. Blakely got away in the lead, but Rogers got by him in the first mile and had a lead of nearly a mile, which he held for nearly four miles, when his steam seemed to fail and Blakely and McCready passed him.

The Stanley "Bug," driven by Fred Marriott, and Capt. Hutton's 20-horsepower Rolls-Royce, piloted by R. A. McCready, were the only starters in the five-mile flying start record race. The steamer won by a mile or more.

A slow race for stock cars for a quarter of a mile on the high gear had seven starters. W. A. Adriance, in a Stevens-Duryea car, won in 1:13; Walter C. Baker, Peerless car, was second, and Ralph Owen, Oldsmobile, third. The cars carried a full quota of official observers.

In the mile contest, with flying start, for stock touring cars, fully equipped and carrying four passengers of an average weight of 150 pounds, there were three starters: Frank Durbin, 20-horsepower Stanley; G. D. W. Rose, 30-horsepower Stoddard-Dayton, and R. A. McCready, 20-horsepower Rolls-Royce. The Stanley won easily by a furlong from McCready in 53 2-5 seconds, the same distance separating McCready from Rose.

Summaries, First Day, January 21.

ONE MILE RECORD TRIAL.

Stanley Steamer, 30-h.p.; driver, Fred Marriott,.....38 4-5 sec.
Curtis Motorcycle, rider, George Curtis.....1:04 4-5
Stanley Steamer, 30-h.p.; driver, L. F. Baldwin.....Did not finish.

Summaries, Second Day, January 22.

FIVE MILES, STANDING START, FOR ALL CLASSES OF CARS, AMATEURS TO DRIVE.

1. American Mercedes, 70-h.p.; driver, Edward Blakely.....4:25
2. Rolls-Royce, 20-h.p.; driver, R. A. McCready.....
3. Stanley Steamer, 30-h.p.; driver, H. E. Rogers....Did not finish.

FIVE MILES, OPEN, FLYING START, FOR WORLD'S CHAMSHIP RECORDS.

1. Stanley Steamer, 30-h.p.; driver, Fred Marriott.....3:44 4-5
2. Rolls-Royce, 20-h.p.; driver, R. A. McCready.....4:52 4-5
(Record, 2:47 1-5, made by Marriott last year.)

MILE-A-MINUTE, FLYING START, FOR TOURING CARS, FOR THE AMERICAN CHAMPIONSHIP.

1. Stanley Steamer, 20-h.p.; driver, Frank Durbin..... :53 2-5
2. Rolls-Royce, 20-h.p.; driver, R. A. McCready.....1:09 2-5
3. Stoddard-Dayton, 30-h.p.; driver, E. D. W. Rose:.....

SLOW RACE, QUARTER MILE, FOR TOURING CARS, ON HIGH GEAR.

1. Stevens-Duryea, 30-h.p.; driver, W. A. Adriance.....1:13
2. Peerless, —-h.p.; driver, Walter C. Baker.....
3. Oldsmobile, 40-h.p.; Ralph Owen.....

FIVE MILE FLYING START MATCH RACE.

1. Stanley Steamer, 30-h.p.; driver, H. E. Rogers.....3:54 4-5
2. American Mercedes, 70-h.p.; driver, Edward Blakely....

ONE MILE STOCK TOURING C \RS.

1. Oldsmobile Pathfinder, 35-h.p.; driver, Ralph Owen.....1:12
2. Winton, 30-h.p.; driver, Asa Paine .....
3. Wayne, 30-h.p.; driver, A. L. Kull .....

RECEPTION OF THE OLDSMOBILE FLORIDA PATHFINDER AT HOTEL ORMOND, ON THE CONCLUSION OF ITS HISTORIC TRIP.

HOTCHKISS TAKES A. A. A HELM.

(Continued from page 182.)

road appropriations are from the States, as the result of local agitation, and future work in this direction must be done largely through State associations and clubs. This work is, however, the most far-reaching of all work attempted by automobile bodies, and as a part of it, a great central committee representing most of the States can, by co-operation and counsel, accomplish much.

It is suggested that there are already too many good roads committees. Perhaps so. Yet even a central sub-committee, composed of representatives of national organizations only, cannot accomplish in a year what a State committee, familiar with local conditions, can in a month. Decentralization, rather than centralization, is necessary to the good-roads movement, and this association will do well if it leaves this matter largely with the States.

The recent enthusiastic launching of the Long Island Motor Parkway project marks an era in road development. Some suggest that it means that, as motor vehicles become larger and more powerful, they will, like the older locomotive, be driven to roads of their own, and the early history of the steam car on the public highways be repeated. Vital differences between the locomotive and the motor car, together with the increasing acquiescence of the public in their operation on the common roadways, preclude such a result. However, that, side by side with the highways, especially in populous districts, will be constructed private roads for motor vehicles is no longer a prophesy; no more is the statement that, before many years have passed, they will be constructed not by enthusiasts, but purely as an investment. The association is to be congratulated on the activities of many of its prominent members in the pioneer movement of this kind and, while not actively participating in any private work, should co-operate with members desiring to promote or construct such motor highways to the limit of its power. In the division of the associations work this new branch naturally falls within the sphere of the good-roads board, and to such board should be assigned.

Touring.—How far the association should assume charge of a tour, which is, in effect, a trade contest, is a difficult question. The very conditions surrounding a struggle for the best advertisement make successful management doubtful from the start. Criticism is certain; all of it loud voiced, much of it trivial, and, doubtless, a deal of it unwarranted. It is hard to say, however, that the association should not hereafter regulate the contest for the Glidden trophy, so generously given into its custody, and the touring board will doubtless make new rules and seek again the impossible, i. e., the award of the trophy to the best tourist, when the contestants are largely professionals and the real tourist takes the other road.

The touring board, however, has work before it of a broader, better kind. While governmental conditions and the absence of nearby frontiers in the United States present far different facts than those noted by tourists in France, as our roads improve and State laws become more uniform, the association should perform for the touring motorist—and who in the coming years will not be one?—what the Touring Club of France does in the great European republic, in fact, on the continent at large. Such a work is not to be done in a day or even a decade. But a beginning can be made now.

It may be done in a very simple way. Next to roads, tourists want road signs. The touring board should at once adopt a sample metal distance sign and a code of roadside directions similar to, though not necessarily as complex, as those in use in France, and when adopted furnish a set of such samples to each State association and club, with a circular indicating the territory and roads allotted to each, as well as the cost of the signs, and requesting immediate action. Moreover, if the treasury warrants, the association will find no saner use for its funds than by proportionate appropriations toward the road-sign expense of its affiliated bodies.

This, however, should be but the beginning. There should be established in the secretary's office, under the general supervision of the touring committee, a bureau of touring information, by which should be collected all published touring information as to roads, laws, hotels, maps and the like, which information should be given out to a member on request, and, if funds warrant, later published on route cards. Here the member in doubt as to the best road, in search of information as to roads improved or in process of improvement, seeking to purchase the best maps of a given territory, asking suggestions as to hotels, and, above all, desiring information as to speed restrictions and registration requirements, should be able promptly and without expense to learn. Little can, perhaps, be done the first season. But let the work be begun, and, if properly systematized, it would shortly put a value on membership not now felt and, in the end, point the way to a touring department which might include within itself all the benefits that make membership in the Touring Club of France so essential to European motor travel.

Racing Board.—The function and work of the racing board have been so prominent a part of the history of the Association as to need no comment here. The subject of racing and racing rules can safely be left with the racing board.

The Press.—Absolute impartiality between representatives of the daily or the trade press must be the rule, and any infraction of it should be noted and sharply reprimanded.

Such are some of the considerations which seem to deserve mention at the outset of the present administration. They are put forward, not as pledges, but suggestions. Ready sympathy with and quick response to the official actions of the executive and other committees and boards are essential to efficient work.

I bespeak of you all that cooperation in labor from which alone can come that for which we all give our time and our thought—the greatest good to the greatest number of road users, be they yet motorists or not.

NEW STATE SECRETARY IS ELECTED.

At a meeting of the board of directors of the New York State Automobile Association, held in the clubhouse of the Automobile Club of America, Saturday, January 19, C. D. Hawkes, of Albany, was elected secretary in place of F. H. Elliott, of Syracuse, who resigned to become secretary of the American Automobile Association. O. A. Quayle, the president, announced the appointment of Robert Lee Morrell, of New York, as chairman of the Good Roads Committee, who is authorized to appoint the members of his committee. A legislative committee of twenty-three was also named.

STATUS AND PROSPECTS OF THE INDUSTRY.

By ELLIOT C. LEE,

President Massachusetts State Automobile Association.

It can be all summed up in the one word "amazing."

At the time of the New York Show in January, 1906, it was obvious that there was not only a vast increase in the public interest in automobiles, but also everyone could see that the public had, at least for the most part, clearly defined ideas as to the requisites of a satisfactory car. It is not enough to-day that a car should go for an all-day trip without giving trouble on the road, but it must also go quietly; must go up all reasonable hills on the high gear; the control must be simple and quick-acting; the capacity for passengers and baggage must be large, and the car, while amply strong, must not be too heavy. At the Show last year one could see that the makers had endeavored to meet all these requirements, and had, besides, made ample provision, by limousine, landaulet, and other covered or partly-covered bodies, for those who wished to use their cars without being exposed to the weather.

All this could be seen at the Show; but the following season, from March till December, really showed what the automobile industry had become. The increase in the number of cars, especially in the number of large cars, was beyond belief, almost. On Sundays and holidays the main roads in and about Boston were so crowded that it was like a procession or a parade, and not for a few hours only, but all day long. On week days the cars were not quite so numerous, but there were plenty to be seen coming and going on all the roads, and as the season went on the number seemed to increase, steadily and rapidly, until during October, and well into November, if one had been out on the roads for six or eight hours, it seemed as if one had not seen any other kind of traffic at all.

For the ensuing year it is my belief that the growth will be more rapid than ever before. Manufacturers have increased their plants, and the people have now learned that cars are made of a power and endurance to carry their passengers wherever they want to go and for as many hours as they wish to ride—and this will cause a great addition to the number of users, since many have hitherto refrained from buying cars for fear of constant breakdowns, etc. In fact, as far as I can see, the only limitation on the use of automobiles during the next ten years will be the inability of the makers to supply the cars. Even if five million cars are built during that time there will still be in this country some seventy-five million people who are not yet supplied; and other countries will want some, too.

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Hotchkiss Administration Should Bring Results.

There should be a powerful national organization of automobile users. The American Automobile Association has only partially met the situation. It has promised much, accomplished some things, and left a great deal undone. That which has remained neglected is a fertile field. Every organization must have an energetic leader about whom its members can rally, assist in what he outlines, and enlist others to aid in the work for the general good. It is the busy man who has forced upon him additional duties, for all know that he will do whatever task he assumes. William H. Hotchkiss, the incoming president of the A. A. A., is a man whose time is subject to heavy demands, and reluctantly he consented to take the leadership, and he only agreed because he is aware that automobiling's future requires some immediate attention—to-day and not to-morrow. His inaugural, printed on another page, is recommended to the earnest reading of all automobilists, and if they are not members of the national body the arguments of Mr. Hotchkiss would appear sufficient reason to cause them to make application for such membership at once.

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The Crime of False Registration Tags.

No more effective way of preventing the reprehensible use of fake registration numbers can be established than that of compelling a visitor from another State to carry a national touring number which shall be issued to him only after he has been properly registered in his home State. The protection of owners who are observing the law requires that these highwaymen of automobiling be apprehended in a summary manner and be given a punishment of a severe nature and one that will serve as a warning to others who are tempted to disguise their identity with fake numbers. It would be a most convenient arrangement for the registration sign to have on one side the driver's home number and on the other side his national designation. As it is, in those States which recognize the licenses of other States there are automobiles which have never been driven a mile in the States from which their owners pretend to come. This abuse has been an argument frequently employed by autophobes, and it is an evil which should have general attention before the new army of owners takes to the roads in the spring; for though automobiling is now a year-round pastime, the majority of owners prefer a winter season of inactivity. That the practice represents a most facile method of deception as well as one that is most difficult to detect, must be evident on but a moment's consideration of its possibilities. The difficulty of obtaining evidence sufficient to apprehend a suspect is such that the autoist who wishes to avoid payment of the taxes in those States that recognize alien licenses or registration tags has but to purchase one of the latter to be safe from this draft on his pocketbook as well as the more serious certainty of being apprehended through a genuine registration tag in case of accident.

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Setting a High Standard for Future Shows.

From whatever point of view it may be considered, the seventh annual show of the Association of Licensed Automobile Manufacturers must be put down as the most successful event of its kind that has ever been held in this country. Whether regarded from a purely esthetic standpoint, or its reverse, the absolute commercial view, including as it does that far from unimportant consideration of matters financial, the show must be conceded to represent an event that will go down into history as having marked a hitherto unapproachable achievement, as well as setting a standard for future events, that will call for strenuous endeavors and no little outlay if it is to be equaled.

Those who had an opportunity of seeing for themselves the magnificent setting that was prepared for the automobile, as well as the beauty and mechanical soundness of the cars that occupied every available foot of space on the main floor and elevated platform of the Garden, need no statistics to impress upon their minds the vastness of the showing nor the elaborate scale on which things were done, while to those who were not so fortunate they must fail to convey anything but a hazy idea. However, a few random figures may not be amiss in that they serve to give an inkling of the extent of the industry that was represented by the gala showing. For instance, 45 exhibitors displayed 230 cars of all types, beside which there were put on view eight of the racing cars that took part in last year's Vanderbilt cup race.

These ranged in price from $400 to $12,500, probably averaging something like $2,000 each for the whole, so that this part of the show alone was valued at close to half a million dollars in round numbers. Add to this the vast assortment of wares, many of them of an expensive nature, shown by the 204 exhibitors of accessories who occupied every square inch of floor room that could not be utilized for showing cars, and the value of the whole approaches a figure that far outshadows anything of the kind ever attempted in this or any other line of endeavor. If this were not enough, the mere fact that the association, under the auspices of which the show was held, felt justified in spending such a sum of money to ornament the building for one week is sufficient to indicate the truly elaborate scale on which the affair was managed. Concerning the show's status as an annual fixture of the metropolitan winter season, the announcement that the city's most prominent hostelries were all full to overflowing is ample evidence of the strength of its attraction. This, taken in connection with the statement that the last Horse Show did not fill the hotels, is a stronger indication than ever of its potence.

NO ACCESSORIES SHOW NEXT FALL.

Next to the business of electing a set of officers for the ensuing year the chief matter of moment before the Motor and Accessories Manufacturers, Inc., at its annual meeting held during show week was that of passing on the question of holding an exclusive accessory show next fall. After some discussion it was voted down. The following were elected officers for the coming year: President, H. S. White, Shelby Steel Tube Company; first vice-president, H. E. Raymond, the B. F. Goodrich Company; second vice-president, William H. Crosby, W. H. Crosby Company; third vice-president, E. W. Beach, Manufacturers' Foundry Company; treasurer, W. S. Gorton, Standard Welding Company; secretary, P. S. Steenstrup, Hyatt Roller Bearing Company. The following were elected directors for the same period: D. J. Post, the Veeder Manufacturing Company; J. W. Gilson, the Hartford Rubber Works Company; C. E. Whitney, the Whitney Manufacturing Company; H. T. Dunn, the Fisk Rubber Company; F. E. Castle, Gray & Davis; C. T. Byrne, Byrne, Kingston & Co.; L. M. Wainwright, Diamond Chain & Manufacturing Company. The meeting was held at the Hotel Astor, and there were about ninety members present, either in person or represented by proxies. In the course of his address, the president gave a résumé of the year's work, stating that the association now has a membership of 173. The treasurer's report showed the association to be in sound financial condition, while the advertising committee read a detailed report of its work which was received with great interest by the members. Both the president and the treasurer were tendered a rising vote of thanks for their efforts during the past year.

PETER S. STEENSTRUP,
Newly elected secretary of the Motor and Accessories Manufacturers, Inc., who conducted the Fifth Hyatt Feast at the Waldorf-Astoria so successfully during show week.

LEGISLATORS ARE BUSY IN ALBANY.

Drastic automobile laws are threatening in Albany. If the bill introduced in the Assembly on January 9 should become law not only would the maximum speed limit be reduced from twenty to fifteen miles, but machines would have to be geared so as not to be able to produce any more than the lesser speed. Three other bills affecting automobiles have been presented to the legislature and more are expected shortly. Assemblyman Hamn's bill gives town boards the right to limit speed outside villages, and would, if passed, bring in a fifteen miles limit in many districts where twenty miles are now permitted. Assemblyman Cuvillier provides in his bill an annual license fee of $25 for chauffeurs, an examination as to qualifications, a twenty-one-year age limit and ability to read and write English. Assemblyman Stanley has an elaborate measure providing for a State Motor Vehicle Commission, to have entire control of automobiles. Chauffeurs must be at least eighteen years old and a "reasonable and proper rate of speed" must be observed. The Albany Automobile Club favors asking Congress to provide for uniform interstate licenses. An annual tax will not be objected to if the proceeds are applied to the improvement of highways and oiling of country roads. Two later bills provide for insurance against accidents by automobiles, and amend the insurance law by including automobiles in the list of insurable property.

AERONAUTS WILL HAVE BUSY YEAR.

PARIS, Jan. 15.—The year 1907 promises to be one of considerable activity in the French aeronautic world. Comte Henry de La Vaulx has already made two or three successful trial trips in his new steerable balloon, and will very shortly remove to his new balloon garage at Saint Cyr. Walter Wellman, of Polar fame, has installed himself in the vast Galerie des Machines, close by the Eiffel Tower, where he is fitting out his balloon equipment previous to shipment to Spitzburg. The balloon has a total length of 177 feet, and is driven by a 90-horsepower motor. At the end of the month the Aero Clubs of France and Spain will meet at Bordeaux to commemorate the first crossing of the Pyrenees by the late J. F. Duro. Early in the spring the new balloon sheds and inflating station of the Aero Club of France, located at Saint Cloud, near Paris, will be officially opened, and a few weeks later the clubrooms will be removed to a new building in the center of Paris.

Heavier than air enthusiasts, at present busy in their workshops, will come out with their new machines with the first signs of spring. Santos-Dumont is looked upon as a certain winner of the 50,000 francs' Grand Prix, but will have as competitors Captain Ferber, Bleriot, Tatin, Société Antoinette and Comte de La Vaulx.

The new military steerable balloon *Patrie* is awaiting less wintry weather to allow it to make its long journey from Paris to Verdun, its fighting port on the German frontier. Later in the year the *République* and the *Démocratie*, both designed by the engineer Julliot, will join the fighting ranks. The *Lebaudy* will remain at Chalois-Mendon for the training of military officers.

Coming competitions include a long-distance test in May, Le Figaro race in June, the Grand Prix of the Aero Club of France in September, and the Gordon Bennett contest in October, at which France will have a full team. The *Ville de Paris*, M. Deutsch de la Meurthe's new steerable, will attempt to win the $4,000 cup for the first complete tour around Paris.

A. L. A. M. PRESIDENT ON BRITISH SHOW.

Charles Clifton, president of the Association of Licensed Automobile Manufacturers, has just returned from a trip through Europe. While in London he attended the big Olympia automobile exhibit, and gives it as his opinion that for show methods and artistic treatment the American exhibit is far superior. In respect to the cars, however, Mr. Clifton spoke in high terms of the progressive manner of the English manufacturer, who, like the American maker, seems to have found the keystone of the industry in using materials of a higher quality, with better constructing methods than hitherto, and thus building cars of permanency and reliability.

"The predominant feature in the English automobile industry," he added, "is the pronounced popularity of the six-cylinder car and the number of different makes that are being turned out. It has surely taken root among English motorists more firmly than anywhere else."

MR. VANDERBILT'S INTEREST IN PARKWAY.

A recent cablegram from W. K. Vanderbilt, Jr., president of the Long Island Motor Parkway, Inc., from Paris, sending a substantial subscription, indicates that Mr. Vanderbilt has not ceased to make the Parkway his first care. Mr. Vanderbilt is being kept fully informed as to the progress of affairs, particularly as to the procurement of rights of way. The recent action of the Board of Trade in Riverhead in voting to subscribe to about $25,000 worth of stock and bonds and its guarantee to secure at least twelve miles of right-of-way and turn the same over to A. R. Pardington, the second vice-president, makes apparent the firm belief of that organization in the benefits to accrue to the town as a direct result of the construction of the Parkway.

GREAT BRITAIN AND THE TOURIST TROPHY

LONDON, Jan. 14.—True to its declared policy of last year, the Automobile Club of Great Britain and Ireland will not lend its support to any international event for racing cars, but will devote all its energies to the improvement of the Tourist Trophy Race. This time the race will be held at the end of May and probably on the same Isle of Man course as before. The rules governing the contest are materially the same as in the previous races, but this time the fuel will be a special brand of gasoline supplied by the club, and allowance one gallon for each 25 miles traversed. Six circuits of the 40-mile course will be made, and doubtless an average of nearly 45 miles an hour may be expected from the winner.

Since the issue of the rules for this race, however, a suggestion advanced by the Society of Motor Manufacturers and Traders has been agreed to by the club, and to-day there are issued rules governing the International Heavy Touring Car Race. This is purposed to be a race for the development of ideal touring cars, such as are usually fitted with covered bodies and of the horsepower required by the ordinary user, as opposed to the racing car. The limitation of power and speed is effected by fixing a definite fuel allowance of one gallon of gasoline for each 16 miles of the course. To be held this year on the Isle of Man in September, the race will be in distance between 250 and 400 miles, and the system of controls will possibly be reintroduced. A total load of 2,240 pounds, inclusive of driver and mechanic, must be carried by the chassis, and while no weight limits are imposed for the chassis, definite standards are set up for size of the track, wheelbase and body. To prevent undue raising of the gears, that Tourist Trophy rule is incorporated which requires a half mile to be covered at a rate of not more than 12 miles an hour without slipping the clutch. The entry fee is fixed at $150, and the list will remain open until May 1.

Formation of the Brooklands Automobile Racing Club has already been chronicled, and great efforts are being made to enable the official opening of the club's track at Weybridge, to take place in May. For the first meeting, provisionally dated May 18, some big prizes are announced, including the Montague Cup of $10,500; the Gotlieb Daimler Memorial Plate of $3,250, and the Marcel Renault Memorial Plate of $2,750, the total of the day's list reaching $23,000. Plates are offered at first, but later it is intended to run sweepstakes and handicaps when the track becomes more familiar. To the fore, as ever, S. F. Edge has booked the track for the first available day with the determination to set up on a 60-horsepower Napier a new world's 24-hour record, a speed average of 60 miles an hour being reckoned on. Not to be outdone, Charles Jarrot will attempt to lower Edge's record the following day with a 60-horsepower De Dietrich. The battle of the six vs. four cylinders will thus be waged by the foremost advocates of either system, and possibly a race between them will be arranged.

The news just to hand of the proposed European tour of American cars this summer attracts much attention, but it is to be regretted that out of the 4,000 miles total, but 250 miles is allotted for the British share of the tour, this consisting of a "hustle" straight across country to Liverpool. Surely it might be arranged to map out another few hundred miles by embracing Wales and the West of England, and possibly an interesting trip round the Lake District.

FRANCE OFFICIALLY ANNOUNCES THE GRAND PRIX

PARIS, Jan. 15.—The Automobile Club of France is resolved that in the matter of road racing it shall remain at the head of the nations of the world. Its Grand Prix last year—the successor of the Gordon Bennett—was planned to make it the most wonderful road race ever held. This year, on a date to be fixed late in June or early in July, another Grand Prix will be held differing from the last in that the fuel supply will be limited to 6.6 gallons per 62.1 miles. With such a liberal supply of gasoline monsters of 120 and 130 horsepower can be built capable of the highest speeds. Now, even in France, only a few firms have the necessary experience and capital for building high flyers, and there was a danger of the performances of the select few being eclipsed by the big entries obtained in the German Emperor's race and the Tourist Trophy of the British club. Both these are speed contests, the one with a limited cylinder capacity, the other with a maximum fuel consumption, notwithstanding the "Tourist" title of the British event and the tourist mention in the German regulations.

It is probably this which has decided the sporting committee of the A. C. F. to hold Grand Prix No. 2 on the day following Grand Prix No. 1 and over the same course. The second day's race will be for machines with a gasoline supply limited to 3.3 gallons per 62.1 miles. There will be no other restrictions of any kind. Although detailed regulations are not yet published, it is probable that the second race will be on the same lines as that of the first day, with the total distance reduced to 320 miles. There will be no controls or neutralizations; the driver and mechanic will fill tanks, change tires and do all work; a single tire and gasoline station will be placed on the circuit; dismountable rims will be allowed. With this fuel allowance the machines are likely to average between 40 and 50 horsepower and to develop a speed of 45 or 50 miles an hour. Every manufacturer of importance builds a machine of this type; to fit it for the race would only entail slight modifications and little expense. A big entry is consequently expected, and in view of the success of the Tourist Trophy and the German Emperor's race this expectation is likely to be fulfilled.

Although enthusiastic over the new race, French automobilists do not hesitate to criticise. They ask that the 3.3 gallon machines should run the first day, the original Grand Prix being reserved for the second. Twenty or thirty heavy racers rushing round the course at mile-a-minute speeds will utterly spoil the road surface and make the task of the smaller machines unnecessarily difficult. A big entry is likely to be obtained for Grand Prix No. 2—from 60 to 100 cars are looked upon as probable starters—and if special precautions are not taken accidents will ensue.

Grand Prix No. 2, distance 320 miles, fuel allowance 3.3 gallons per 62.1 miles, is open to teams of three from any factory at an entrance fee of $700 per car. Entries close February 7, but are received later on payment of an increased fee.

Grand Prix No. 1, distance 500 miles, fuel allowance 6.6 gallons per 62.1 miles, is open to teams of three from any factory at an entrance fee of $1,000. Entries close on same date. Six machines have already been officially entered—three Bayard-Clément to be driven by Albert Clément, Garcet and Gauderman, three Darracqs with Wagner, Hanriot and Demogeot as pilots. Two Civelli de Bosch machines are also announced as certain starters in this event.

NEW HAVEN'S AUTOMOBILE ACTIVITIES.

NEW HAVEN, CONN., Jan. 21.—The automobile industry has reached New Haven. The University Automobile Company, of this city, C. S. Johnson, president, is now building both runabouts and a 30-35-horsepower touring car. The new machines will be known as the Continental, and the first output will be ready for the market in about two weeks. The touring car will weigh about 2,500 pounds and will embody several novel improvements, among which will be a self-starting device. This company will also carry the agency this year for the Wayne car.

The F. E. Bowers Company has been incorporated and has started the erection of a plant in this city. The new company will for the present confine itself to putting out a new carbureter, which it controls, and is said to give great promise. The new carbureter can be attached to any type of motor. The company will also deal in all automobile accessories. The corporation is capitalized at $10,000 and will begin business at once. The incorporators are Fredsom E. Bowers, Clarence G. Spalding, Harold P. Warren, and Edward B. Spalding, all of this ctiy.

THE AUTO PROVIDES FINE WINTER FUN.

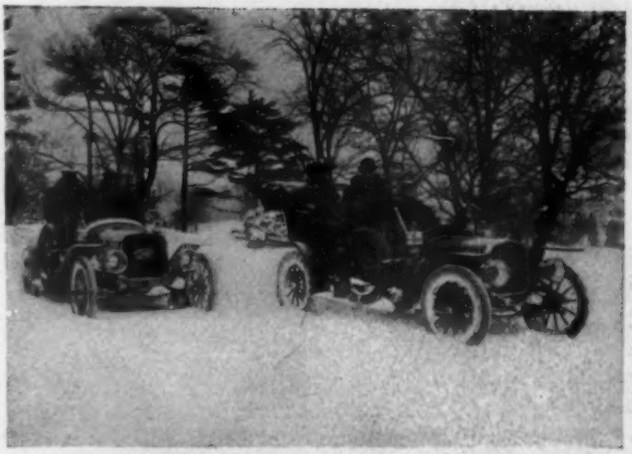
Detroit has had very little snow this winter, but January 12 brought good sledding and fun for Michigan boys. Young Ford, the twelve-year-old son of Henry Ford, the automobile

EDSEL FORD AND HIS FRIENDS HAVING FUN.

manufacturer, has a runabout out of which he gets much enjoyment driving his mother on her shopping and calling tours and between times giving his less fortunate playmates a ride. With the first snowfall Master Edsel found a new use for the automobile and a way to entertain several friends at once. The accompanying picture illustrates a sight that is familiar to all drivers on Detroit's Grand Boulevard, but it cannot show the speed with which little Ford in his speedy runabout whipped the sleds of the other boys round corners, rolling them over in the soft snow and giving them a touch of high life generally.

THOMAS NON-STOP CAR OFF TO CHICAGO.

With 467 hours and 37 minutes, and a total mileage of something like 2,800 already to its credit, the Thomas car in charge of Ernest Kelly, of Philadelphia, that has been running steadily ever since January 2, when it was started in Harrisburg, Pa., left New York for Chicago Monday afternoon, January 21. It was originally intended to ship the car by express, with observers accompanying it to see that the motor was kept going, but this was abandoned and the trip by road undertaken despite the advice of autoists familiar with the route. The car started on its journey westward from Harry S. Houpt's new Thomas salesrooms, Broadway and Sixty-third street.

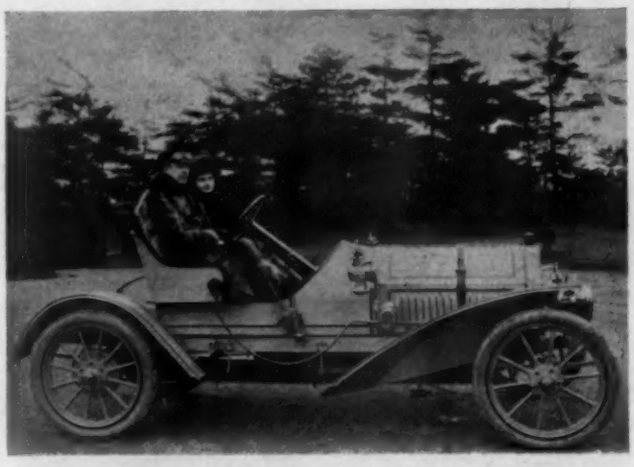


NEW CORBINS ENJOYING THE YEAR'S FIRST SNOWSTORM.

FIRST SELDEN CAR READY THIS SUMMER.

The Selden Motor Vehicle Company, of Rochester, N. Y., recently organized with a capital of $500,000, expects to have its first new car on the market by the middle of the coming Summer. The appearance of this car will be awaited with much interest, particularly owing to the fact that E. T. Birdsall, one of the pioneer mechanical engineers of the automobile industry, is the chief engineer of the Selden company and the designer of its car. Mr. Birdsall was a technical adviser of the Vanderbilt Cup Commission for several years, is secretary of the Society of Automobile Engineers and has been a prominent official at many of the important race meets and touring contests held in this country. Frank D. Russell, who has been identified with the Rochester Car Wheel Works for the past fifteen years, will have personal charge of the manufacturing end of the Selden company, the plant of which is being located at East Rochester, where building operations are already under way. The plant will cover over eight acres of ground.

The Selden directors for the first year are: George B. Selden, George G. Foster, Frank D. Russell, Gilbert E. Mosher, R. H. Salmons and J. M. Walmsley, of Rochester, and Louis A. Fischer, A. Snyder and A. G. Bartholomew, of Buffalo. With Mr. Selden as president, the other officers are as follows: First vice-president, Louis A. Fischer; second vice-president, J. M. Walmsley; treasurer, Gilbert E. Mosher, and secretary, R. H. Salmons.

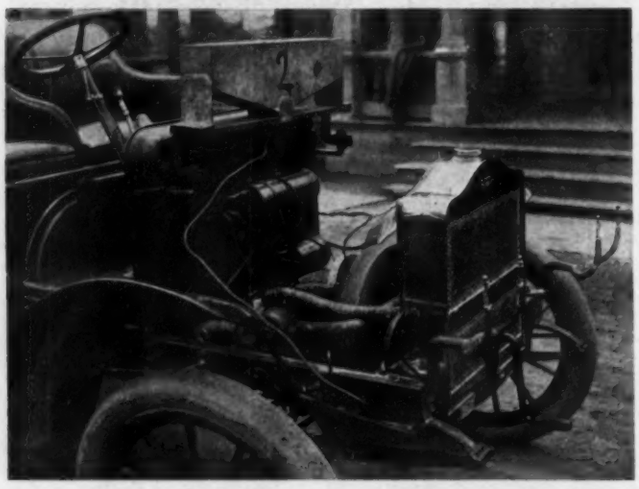


EDWARD RUSSELL THOMAS IN THOMAS "FORTY" RUNABOUT.

Considerable confusion results generally through the fact that the New York banker and the Buffalo automobile manufacturer bear the same name. The two men are not related. Mr. Thomas' sister occupies the other seat in the runabout alongside him.

PRACTICAL TESTS OF DIFFERENT FUELS.

With a view to determining more definitely just what can be done with alcohol, kerosene, benzine, naphtha, etc., for automobile use, the Maxwell-Briscoe Motor Company have just undertaken a series of tests on the road and in the laboratory. Probably picric acid will be experimented with also, in order to determine what percentages of this high explosive are practical in



MAXWELL CAR FITTED FOR SPECIAL FUEL TESTS.

connection with the fuels ordinarily used, though its employment is not at all advisable under any circumstances, even though greater speed and power are obtainable. Though "naphtha" and "benzine" are included in the list of fuels, which, it is stated, will be tested, it may be as well to add here that these are but other names for the same substance which is more generally known as "gasoline," so that the results of a formal test of their power-producing qualities would be apt to be misleading unless this were taken into consideration. Originally these names were employed to designate the varying specific gravities of the different products of distillation, but they have long since become nothing more than trade names for the same thing.

The first road test will take place this week, when three Maxwell runabouts will be driven from New York to Boston, using different fuels. One motor will be operated with gasoline, another with kerosene, and still another with denatured alcohol. Observers will be appointed by the New York Motor Club to make official reports on mileage and the quantity and cost of each fuel used. Stock cars will be used, since the experiments at the Tarrytown factory have demonstrated that a Maxwell motor will run on kerosene, alcohol or gasoline.

The chief object of the tests is to demonstrate that fuels of varying specific gravities, or density, can be used to advantage in the same carbureter. Aside from gasoline, the chief of these are alcohol and kerosene, the latter being far heavier and less volatile, which accounts for the difficulty in starting the motor on it from all cold. Both the first cost and consumption of alcohol are far greater in the present type of motor than when using gasoline, and not as much power is developed, owing to the fact that neither the compression nor the stroke are such as to utilize the expansive force of alcohol to the best advantage. There is not so much difference in the case of kerosene, and the average motor will run on it almost as well as with gasoline once warm enough to vaporize the fuel. The photograph shows the special tank fitted to the dash of a Maxwell two-cylinder car for the purpose of the tests. The data gathered will be made public later. H. A. Grant, M.E., is conducting the experiments.

Two new garages are to be built on Long Island for the coming season. One will be located at Glen Cove, the other at Bay Shore. Both will make a specialty of catering to the rapidly increasing Long Island tourists' wants.

A FRENCHMAN ON AMERICAN INVASION.

Commenting on the proposed invasion of Europe by American automobiles, Paul Meyan, a prominent French automobilist, says: "The American industry has not yet settled on definite lines; efforts are dispersed and groping—luckily for us. But as soon as the American producer has reached a higher stage he will confine himself to the production of a single type of car and turn them out in such quantities that local needs will be more than supplied. Half of the machines will be sold at home, the other half will be sent to conquer foreign markets, where they will be sold at cost price. We shall not be able to stand up before such competition; our flourishing export trade will be killed by the American series. We have only one means of protection—a customs duty. With a thirty-million-dollar export trade we are told that we have no need of protection. That is a theory; it has not yet been proved that it is a good one."

Advocates of the protectionist theory will find much satisfaction in the arguments advanced by M. Meyan. The pros and cons of the question are worth a careful investigation.

NEW SCHEBLER PLANT AT INDIANAPOLIS.

The new Schebler carbureter plant at Indianapolis, Ind., which will be ready for occupancy in about two weeks, is built of reinforced concrete and shale brick. This plant covers an entire block, and is located at Shelby and Sanders streets and Barth avenue. Its output will be 10,000 carbureters a month, and when running full force will employ nearly 500 men. Two years and a half ago, when the Schebler was first brought out, two men were employed to make the carbureters. The wonderful increase in the automobile industry is shown when a part maker in two years' time increases his facilities from an output of 400 carbureters a year to 100,000 carbureters a year. Mr. Wheeler states that the business during 1907 will run to about a million and a half dollars, according to orders now booked.

The foundry proper has the largest concrete arches above ground in the world, the span being 65 feet, without a post or support. The length of this room is 135 feet. The roofs and floors are all reinforced concrete, the foundry having a circular roof, which is a new idea in concrete construction. The

NEW HOME OF THE SCHEBLER CARBURETER AT INDIANAPOLIS.

stacks for the powerhouse are also of reinforced concrete. All modern conveniences for employes are furnished, even to lockers and showerbaths for the men. The power is generated by suction gas producers, which give 125 horsepower at a cost of only half a ton of coal a day. The cost of this plant complete, with equipment and machinery, approximates a quarter of a million dollars.

IN AND ABOUT THE GARAGES.

Modern and Finely Equipped Garage for Schenectady.

Close Brothers, of Schenectady, N. Y., are making preparations to erect a large garage in that city at a cost of about $40,000. The location chosen is on Smith street, and the building will be of fireproof brick construction, two stories high with a basement. It will have a frontage of 31 feet on Smith street, will run back along the alley a distance of 180 feet, and will have facilities for storing 200 automobiles. There will be a glass-front vestibule, back of which will be the offices, and back of the offices will be situated a handsomely furnished parlor for ladies. On the east side there will be a passageway 12 feet wide, which will be used as an entranceway for cars. In the rear modern facilities for washing cars will be installed, and the building will be equipped with elevators running to the second floor and to the basement. Work on the building will be started at once.

New Chicago Garage Opened New Year's Day.

The Model Garage Company is the newest arrival in the Chicago field, its fireproof structure at 645-647 East Forty-seventh street, near Grand Boulevard, having been opened on New Year's Day. The officers of the company are: President, J. N. Williams; vice-president, C. Tindolph; secretary and treasurer, C. W. Williams. The building is of iron and concrete construction, 135 feet by 50 feet. Elegantly furnished reception rooms have been fitted up for the use of lady patrons on the first floor, and on the second floor is located a reading and lounging room for chauffeurs. The repair department is fitted with the latest and most approved machinery.

Big Automobile Shed for Garfield Park, Chicago.

In connection with some other extensive improvements which include the erection of what it is reported will be the largest greenhouse in the world, at Garfield Park, the city of Chicago will erect directly across the driveway from it an immense automobile shed. Garfield Park is the site of these improvements, which will cost, exclusive of the green house plants, in the neighborhood of $250,000. The gardens will be located near Madison street, and will be connected by a pathway with the music court.

New Management for Prominent New York Garage.

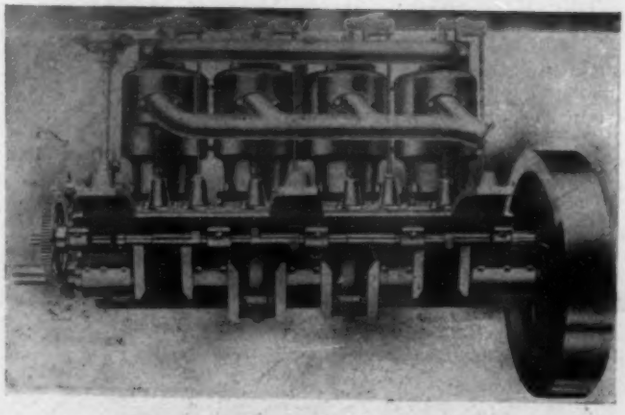
The premises formerly occupied by the Central Park Automobile Storage Company, Central Park West and 110th street, have been opened under new management by C. Herbert Covell, president of the Covell & Crosby Motor Company, and agent for the American Car. Extensive improvements are under way, and when completed will make this one of the finest uptown automobile garages.

Plans for the New Pierce Garage in New York City.

Plans have been filed for a four-story garage to be built for the Kipps Bay Realty Company, at 233-237 West Fifty-fourth street. The building is to have a frontage of 60 feet and a depth of 90 feet, the façade being of brick trimmed with limestone and terra cotta and ornamented with bays. It is to cost $100,000, and upon completion will be occupied by the Harrolds Motor Company, New York agents for the Pierce.

A WELL-KNOWN MAKE OF MOTORS.

Brennan motors scarcely need any introduction, whether to the marine or automobile interests—during the number of years that they have been on the market they have become so well and favorably known that anything on this point would be superfluous. For 1907 the makers of the Brennan motors are specializing to an even greater extent on the four-cylinder vertical type, though the horizontal, double-opposed and four-cylinder opposed types with which their name has always been connected



BRENNAN MOTOR, SHOWING WORKING PARTS IN BASE.

are continued as usual, together with the various types of sliding and planetary change-speed gears with which they are sold, making a complete power plant of almost any capacity required. The two-cylinder horizontal motors are made in seven sizes ranging from 6 to 30 horsepower, the four-cylinder horizontal in three sizes, 28, 32 and 40 horsepower, and the four-cylinder vertical type in four sizes, rated at 12, 18, 32, and 45 to 50 horsepower

With the exception of the varying dimensions all are the same, a standard form of construction having been adhered to throughout each series of motors. Thus the cylinders are separately cast with integral waterjackets, the inlet valves are centered in the heads and operated by push rods and rocker arms, the exhaust valves being at the side. The crankshaft is made from a solid billet of nickel steel and is supported on five ample-sized bearings. The latter are made from a special bronze possessing many of the advantages of babbitt without its disadvantages. All bearings and working parts are made fast to the upper or main section of the crankcase, the latter being divided at an angle of 40 degrees, thus giving free access to every part of the motor from one side of the case, this being well illustrated by the accompanying photograph of the standard type of Brennan motor. The timer is mounted on a vertical shaft, bevel-gear-driven from the end of the camshaft, and is well protected by an effective casing. The water circulating pump is gear driven and is of the gear type. The dimensions of the various sizes are 3 5-8 by 4 inches, 12 horsepower; 4 by 4 inches, 18 horsepower; 5 by 5 inches, 32 horsepower, and 5 1-2 by 6 inches, 45 to 50 horsepower, the normal speed being 800 r.p.m., except in the case of the first named, in which it is 900 r.p.m., though the speed range is from 150 to 1,800 r.p.m. in the case of the smallest, 1,500 in the two intermediate sizes, and 1,200 r.p.m. for the largest.

WHITE 'BUS THAT WORKED HARD DURING SHOW WEEK

TWO-PASSENGER AUTOCYCLE RUNABOUT.

A glance at the accompanying illustration will explain more clearly the principle of the Autocycle two-passenger bicycle-runabout than any word description. This machine has been designed to embody in one vehicle the speed, comfort, and

VANDEGRIFT TWO-PASSENGER AUTOCYCLE.

utility of the automobile with the simplicity, lightness, and cheapness of the bicycle. The body of the Autocycle is carried upon a front steering and rear driving wheel placed tandem in the center line of the vehicle. Upon either side, connected by an axle, are smaller balance wheels which maintain the equilibrium of the vehicle, but ordinarily take little or no weight. By the use of a specially designed link check spring device these wheels remain at all times in contact with the roadway; they turn in unison with the front wheel, each at its proper angle in rounding a curve.

Power is obtained from a two-cylinder 3 1-4x3-inch air-cooled motor, developing 6 horsepower at 1,800 revolutions. Drive is direct by a belt from a pulley on the main shaft of engine to a pulley upon the rear wheel. The motor equipment includes float feed carbureter, four dry-cell batteries, two coils, oil feed, and three-gallon gasoline tank containing fuel for 120 miles. The rear driving wheel revolves with an axle carrying a three-quarter elliptic spring upon either side, supporting the extended arms of the chassis. Ball bearings are fitted in the revolving axle, and on the side opposite to the belt pulled is an expansion brake.

Steering is through an inclined column with the ordinary type of hand wheel. The steering head turns upon thrust ball bearings. Throttle and spark control is by means of levers immediately under the steering wheel.

The body of the Autocycle is of wood, the seat and back upholstered in machine-buffed leather. There is seating accommodation for two people. The total weight of the machine is 380 pounds, and its catalogue price $400. It is manufactured by the Vaudegrift Automobile Company, Thirteenth and Cumberland streets, Philadelphia.

PRIVATE AUTO ROAD TO REACH TUXEDO.

A private automobile highway 45 miles long is to be constructed from the Forty-second street ferry, New York, through the Jersey meadows and Northern New Jersey to Tuxedo, N. Y. It is planned to have the course consist of two tracks thirty-five feet each in width, divided by a thirty-foot road raised to a height of four feet, on which will be built a double track railroad. At each cross road there will be a toll gate and station constructed so as to allow automobiles to pass under the station, thereby making an absolutely open course for the entire forty-five miles. The Motor Car Roadway Company has been organized for the purpose of constructing the highway with a capital of $10,000,000, of which $4,000,000 is to be six per cent. preferred stock. Work on the road is to begin early in the spring and to be completed in two years.

RUNABOUT DESIGNED FOR POPULAR FAVOR.

In designing the Brush runabout no attempt has been made to produce a spectacular car or to turn out an imitation of a high-priced machine. The horse and buggy is an expensive nuisance; a runabout specially designed to meet the needs of those who have heretofore been unable to buy—or if able to buy unwilling to support—a car of the conventional type, is an economical convenience.

The Brush runabout has been built to sell at $500. Low running expenses have been borne in mind, and it is estimated that the total cost for 5,000 miles, including tires and repairs, should not be more than $75 or $100.

A 6-horsepower single-cylinder vertical engine supplies the motive power. It is carried forward under a bonnet, thus making it fully accessible, and is water cooled. With this horsepower more than the legal speed can be maintained, while fuel and oil cost is reduced to a minimum.

As this type of automobile generally gets into the hands of persons of little experience, special care has been taken to give it an absolutely safe fuel system. The tank is the lowest part; the fuel is taken out at the top, and only while the motor is running. There is no float or float valve, no pump plunger or gland, no pressure in the tank, and all piping is above the highest gasoline level. The change-speed mechanism provides eight set speeds, direct drive on the high; gears may be shifted without releasing the motor, and there is no noise or shock in changing. The change-speed mechanism and brakes are commanded by two foot pedals, giving remarkably easy control. The steering gear is irreversible; it is slow and powerful for straight ahead, but accelerates as the steering wheel turns, so that three-quarters of a turn puts it hard over.

Little items of convenience have been carefully studied. Thus the spark plugs may be instantly inspected without unscrewing or disconnecting the wire. Access to the connecting rod bearings is almost instantaneous. Both valves can be removed in thirty seconds. The sight-feed oiler on the dash is automatic. Sprockets are interchangeable, so that when one side of the tooth is worn they can be reversed.

The Brush runabout is equipped with coil-spring suspension because considerably less than one-half of the weight of spring is required, and because there are fewer joints. With the coil springs is combined a friction-spring retarder or shock absorber, so that the regular equipment of solid tires give very easy riding. Pneumatic tires can, however, be fitted.

This machine is being built by the Brush Runabout Company, having its headquarters in Detroit. Deliveries in quantities will begin April 1 and continue, according to the makers' statement, at the rate of fifteen per day.

DETROIT'S LATEST PRODUCTION—THE BRUSH RUNABOUT.

INTERNATIONAL BALLOON RACE, OCT. 19.

At a meeting of the Aero Club of America held Tuesday afternoon, October 19 was confirmed as the date for the international race at St. Louis, and some of the details were arranged. Nine countries will be represented, and a committee was appointed to name three Americans to defend the cup; its report is to be handed in before February 20. A valuable prize has been offered for an aeroplane through the club by a wealthy American, and the former will draft the conditions under which it is to be competed for.

NEW INTERNATIONAL CONTESTS ARRANGED.

The Paris to Madrid tour, announced with a great beating of drums a few weeks ago, has been abandoned by the A. C. F. Instead will be held a 2,500-mile tour for runabouts of the doctor's type, two or four-cylinder, 12-horsepower, to average 150 miles a day at a speed of 19 miles. Also a commercial vehicle competition for both light and heavy cars, over the same distance. The tour will be held around Paris, penetrating more into the industrial east and north than into the agricultural communities of the south and west.

THE HON. C. S. ROLLS RETURNS TO ENGLAND.

After a three months' visit to the United States and Canada, the Hon. C. S. Rolls returned to England this week by the *Kaiserin Augusta-Victoria*. Interviewed by THE AUTOMOBILE correspondent, Mr. Rolls said he did not expect to be back in America until the month of October, probably one week before the balloon race at St. Louis, in which he will form one of the British teams. He will bring with him the Britannia, a 77,750 cubic feet balloon, built by Short Brothers, of London, last year, with which he won third place in the first Gordon Bennett race and remained in the air longer than any of his competitors. Mr. Rolls has formed a company in New York under the title of the Rolls-Royce Import Company, to handle his British-built machines. Two six-cylinder models only will be sold in the States; the four-cylinder type which won the Tourist Trophy in the Isle of Man has been sold out, and it has been decided not to continue its construction. In Canada, where Britishers enjoy a preferential tariff, Mr. Rolls believes that good business will be done. In the United States importers have greater difficulties, American machines having enormously improved during the last two years, though in the opinion of the Englishman they are still built too light.

HOW TO CLEAN AN AUTOMOBILE.

There is some excellent advice given by John T. Stanley, manufacturer of "Mobo," and though he naturally talks about his own preparation his advice has a general application. These are the directions which he gives:

As soon as the car comes in from a run play water from a hose all over the varnished surface. Then let the car stand some minutes, so that the water can penetrate and soften the mud spots. Now use the hose again, playing the water on hard, so as to wash off all the heavy mud and grit. Do not use a sponge, as it will spread all the grit particles over the varnished surface and scratch and mar its luster. Dissolve enough Mobo in water to turn the liquid to a bluish color and to a soft and soapy consistency. Apply the solution to all the varnished surfaces of the machine with a clean sponge, giving a little extra rub to the very dirty and badly stained spots. Then rinse off at once with clear water before the solution dries. After this, dry all the varnished parts thoroughly with a clean chamois.

Do not clean the body of the car with the same sponge used for the wheels and gearing, as in cleaning the latter more or less grease collects in the sponge, and when brought in contact with the highly varnished parts of the car has a tendency to give it a cloudy and smeared appearance.

LOCOMOBILE FOLDING AND REVOLVING SEAT IN POSITION

AN INGENIOUS LOCOMOBILE FOLDING SEAT.

Practical tourist requirements have been kept in view by the designer of the two folding seats shown in the accompanying cuts on a Locomobile car. The seats are the revolving type with upholstered seats and backs. They are peculiar in that all parts, even the irons holding them in place, may be quickly removed and stored on the car in a special compartment designed for the purpose. On touring cars, where space is often needed for dress suit cases, etc., this is a most sensible arrangement. These seats are practically as comfortable as Pullman chairs, but if there is any difference it is more than compensated by the great advantage of being able to get rid of them when they are not wanted.

LONG-DISTANCE TRAVEL BY MOTORCYCLE.

Stanley Bowmar's trip from Buffalo, N. Y., to San Francisco, Cal., on a three-horsepower spring frame Merkel motorcycle having come to a successful termination, the intrepid rider will very shortly set out on another long journey, visiting Los Angeles, Pasadena, San Diego, etc. Mr. Bowmar has taken up the Merkel motorcycle agency on the Pacific Coast, where, thanks to the good roads and favorable weather conditions, motorcycling is in high favor. After spending some time in California Mr. Bowmar expects to depart for his home in New Zealand, in which country he will do further traveling by motorcycle.

The Locomobile line for the coming season shows no more vital change than the general use of annular ball-bearings, of the Hess-Bright silent type, practically everywhere except in the motor. This car had plain bearings throughout as recently as last year on some of the models.

LOCOMOBILE SEATS FOLDED INTO COMPARTMENT.

NEWS AND TRADE MISCELLANY.

Philadelphia's original automobile show promoter, H. D. Le Cato, is to get into the game again, having announced a Sportsmen's and Motor Show at the Horticultural Hall, in that city, for March 6-9.

The Cornish-Friedberg Company, of Chicago, is preparing to put on the market a 16-horsepower shaft-driven runabout. This car was especially designed by Mr. Friedberg to meet the growing and popular demand for a car of this type.

The Holland Launch & Engine Company has been organized at Holland, Mich., with a capital stock of $15,000 for the purpose of making boats and motors. It will occupy the plant formerly used by the Wolverine Company, which has moved to Bridgeport, Conn.

W. W. Campbell, director of Lick Observatory at the University of California, has ordered a Rambler to be used in passing to and from the observatory on Mt. Hamilton. The grades are long and steep, and a more rapid and convenient means of transportation than horses has been for some time desirable.

T. C. Whitcomb, of Cleveland, has formed the Cleveland Auto Livery Company. The new concern will handle the automobile livery business which heretofore has been a branch of Mr. Whitcomb's agency business. Mr. Whitcomb has made a success of the livery business by using good rigs and employing competent drivers.

J. M. Quinby & Co., of Newark, N. J., have completed an extensive addition to their plant, and are installing a complete repair shop for overhauling high-grade cars. This new branch of the business will be under the supervision of Robert Richards. Quinby & Co. will carry in stock at all times a full line of high-grade chassis of the Renault, Fiat, Panhard and Simplex, fully equipped with Quinby aluminum bodies.

Among the Pittsburg companies which were represented at the recent New York show were these: American Automobile Company, Auto Repair Company, D. P. Collins Company, Ft. Pitt Automobile Company, Hiland Automobile Company, Iams Motor Company, E. F. Nevin, Schenley Automobile Company, Standard Automobile Company, Union Automobile Company, Winton Motor Carriage Company and Wilkinsburg Automobile Company.

Tennant Motor, Limited, is the new title for the Northern Motor Car Company, of Chicago, agents for the Peerless and Northern lines. W. G. Tennant has succeeded W. J. Boone as president of the company, and A. G. Brown succeeds K. G. Conway as treasurer. Martin E. Hon remains as secretary, and Clinton Hunter will continue in the position of sales manager. The company will also handle the Mercedes, which Mr. Tennant represented.

To such an extent has the business of the Liberty Automobile Company, Pittsburg agents for the Wayne, grown that larger quarters have become imperative. Work has already begun on an addition to the present quarters at 138-140 Beatty street, East End, which, when completed, will give a frontage of 80 feet and a depth of 110 feet. The new structure, which will be absolutely fireproof, and contain all the features that go to make up a modern sales and storage room, is to be completed March 25.

That outdoor automobile shows are profitable is proven by the statement just completed of the open-air show and carnival held at the Empire track in New York last May by the New York Automobile Trade Association. The profits permit a dividend to the exhibitors of almost twenty per cent., and checks are now being mailed to the exhibitors by the show committee. There is talk of having another show this spring when the selling season is at its height, but whether Empire track will be the location has not been decided.

The Barndt-Johnston Auto Supply Company, of Columbus, O., is erecting a large addition to its plant on Donaldson street to take care of its rapidly increasing business. The new building will be 50 by 100 feet in dimension and will about double the capacity of the plant. The company was incorporated about a year and three months ago with C. Chris Born, president; W. R. Johnston, vice-president and general superintendent; Louis P. Hoster, treasurer, and Charles F. Barndt, secretary and general manager. The company manufactures all kinds of automobile bodies, tops, glass fronts and other accessories.

A novel and at the same time very practical way of demonstrating the value of the Hotchkin shock eliminator was inaugurated by Mr. Hotchkin at his exhibit in the recent Madison Square Garden show. A full-sized cinnamon-colored "Teddy Bear" was placed in a seat suspended above a set of carriage springs fitted with the Hotchkin shock eliminator. The springs were strongly depressed and suddenly released, but so gentle was the recoil that Mr. Teddy hardly budged in his seat. When the shock eliminator was taken off, and the same process gone through with, Teddy Bear took a long jump skyward.

In the recent Denver-Colorado Springs speed and reliability run the winning car, a 24-horsepower Premier touring car, driven by M. B. Fechter, covered the 80 miles in two hours and twenty-eight minutes, which is an average speed of 32 4-10 miles per hour, eleven minutes better than its nearest competitor. Since the railroad schedule time to the same point is three hours and fifteen minutes, it is noteworthy that the automobile has a big margin to the good. Excepting the run to Littleton, ten miles south of Denver, it is a prairie road to Colorado Springs, through deep arroyos or sharp ravines washed out by the terrific rains. There is a constant rise in the run of 45 miles from Denver to Palmer Lake.

J. B. Herreshoff, the world's greatest speed boat designer, who, though sightless, came down from Bristol, R. I., to get in touch with the Automobile Club of America's show, through the marvelous perspective faculties of his fingers, was accompanied by Mrs. Herreshoff and his son Harold, who acted as his guide. At the Cleveland booth he stopped and passed his facile fingers over the car, following the lines of the fenders, the shape of the seats, and upholstery and the taper bonnet. Standing on the low platform, he remarked that the tires were 36 inches, after feeling their height; but, as he stepped back off the platform, he said: "Oh, no, they are only 34 inches, because your platform is two inches high."

RECENT TRADE REMOVALS.

Wednesday, January 23, the new Philadelphia salesrooms of the Autocar Company, at 249 North Broad street, were formally opened. Over 2,000 invitations were issued.

The Rutland Machine and Auto Company, of Rutland, Vt., has removed from West street to 55-61 Wales street, where they have fine new quarters with every modern improvement, and 10,000 square feet of floor space.

The Boston branch of the Studebaker Automobile Company is now occupying part of the store at 15 Berkeley street, for some years the headquarters in the Hub for the Locomobile. About February 1 the Locomobile branch will be removed to Newbury street, near Massachusetts avenue, and the Studebaker will occupy the Berkeley street store.

The George H. Lowe Company, Boston agents for the Aerocar, will be located at 509 Tremont street, the other end of the store facing at 4 Warren street. The location is a well-known one in the automobile trade, having been occupied by the White Company for a number of years prior to the removal of that company's Boston branch to Newbury street.

NEW AGENCIES ESTABLISHED.

John H. Bawden, Jr., will handle the Rambler line at Freehold, N. J., during the coming season.

Pardee & Canary have secured an agency for the Renault car for Chicago, through E. Lamberjack & Co.

Francis B. Morris, 258 North Broad street, Philadelphia, has secured the local agency for the Aerocar.

The Krueger Manufacturing Company, 56 Biddle street, Milwaukee, has taken the Wisconsin State agency for the Premier.

H. A. Knease & Sons have secured the agency for the Rambler for Iowa City, Ia. They will also open a garage in connection with the business.

The Grout Brothers Automobile Company, of Orange, Mass., has placed an agency in the city of Pittsburg, Pa., in the hands of the Central Auto Company, Ltd., 5489 Central avenue.

Smith & Mabley, Inc., appointed the following agents for their line during the recent Madison Square Garden show: Dudley Riggs, for the State of Connecticut; George C. Miller Carriage Company, for Cincinnati, O.

The Anderson Auto Company, of Greenville, S. C., has secured the agency for the Reo and Rambler. The concern is a new one and has opened a garage and salesroom on West Whitner street under the management of J. C. Stribbling, Jr.

William G. Bell, formerly salesman for the Woods Motor Vehicle Company, has taken over the Chicago Auto Garage Company's property, 3210 North Clark street, and will act as north side agent for R. M. Owen & Company, representing the Reo and Premier in addition to doing a general garage business.

The Holmes-Schmidt Motor Company, of Chicago, has been reorganized, O. P. Schmidt retiring to give his entire attention to the construction of the new Marathon car. C. H. Martin has joined the former firm, which will be known as the Holmes Motor Company and will handle the Welch and the Queen.

Competition in electric vehicles has been further enhanced in Chicago by the opening of an agency for the Baker electrics with headquarters at 1413 Michigan avenue, formerly occupied by the Cassaday-Fairbanks Manufacturing Company. G. R.

Pierce and N. G. Isbell are interested in the agency; J. S. Gorham will act as electrical engineer and sales manager.

The Brazier Automobile Works, of Philadelphia, has established a sub-agency for the Marmon car at Wilmington, Del., with the Motor Car Repair Company. The Spencer-Wilkie Motor Co., which represents the Jackson and Glide cars in the Quaker City, has established a sub-agency in Chester, Pa.

The Standard Brake Company, 101 West Sixty-sixth street, New York, has concluded negotiations with the National Brake & Clutch Company, of Boston, Mass., whereby it has become the sole representatives of that company for the United States, covering the use of cork inserts in brakes and clutches for automobiles. Among the twenty-two companies that have adopted cork inserts are such representative manufacturers as Thomas, Rainier, Stevens-Duryea, Knox, Pierce and Nordyke & Marmon. An equitable form of license has been prepared for those companies desiring to manufacture.

PERSONAL TRADE MENTION.

Everett K. Barnes, formerly in the automobile business in Rockford, Ill., has purchased an interest in Pardee & Canary, Chicago.

H. B. Sands has discontinued his active interest in the Plaza Automobile Company, of Brooklyn, and has just joined the selling staff of Smith & Mabley, Inc.

L. M. Cotton, formerly representing the St. Louis Motor Car Company in Boston, has been placed in charge of the Chicago branch of the company, with headquarters at 1223 Michigan avenue.

Robert J. Schmunk, formerly with the White Company's Boston branch, has been appointed assistant manager of the Buck & Price Company, New England distributers for the Rainier car, at 901 Boylston street, Boston.

W. S. Littell, formerly with the experimental department of the Winton Motor Carriage Company, at Cleveland, has gone West and assumed charge of the repair department of the Broadway Automobile Company, at Seattle, Wash.

C. W. Wyckoff, of Wyckoff, Church & Partridge, New York City, is taking a few days' rest at Atlantic City. Mr. Church has gone to Ormond for the races, and Mr. Partridge will take a short respite from business at Lakewood, N. J., in the immediate future.

James Joyce, formerly superintendent of the American Locomotive Automobile Company's plant at Providence, R. I., has just received the appointment as manager of the Albert Frank & Company, with headquarters at the garage, 1886 Broadway, New York City.

O. E. Child has been elected secretary of the Deere-Clark Motor Car Co., Moline, Ill., to succeed C. F. Drury. The company's new directors are C. H. Deere, W. E. Clark, C. H. Pope, C. E. White, A. R. Ebi and A. E. Montgomery. Messrs. Deere and Clark are president and vice-president, respectively.

Thomas Midgley, for the past year president of the Hartford Rubber Works Company, will at a very early date take up, in addition to his other duties, the important position of general consulting engineer to three tire companies—the Hartford Rubber Works, Morgan & Wright and the G & J Tire Company.

NEW TRADE PUBLICATIONS.

"Hawthorne Works" is an illustrated and descriptive booklet published by the Western Electric Company describing their new 110-acre plant at Hawthorne, Ill. Electric power apparatus and switchboards up to and including the largest sizes for street railway service are now a feature of the company's output.

Exceedingly useful hints on the care of solid rubber tires are included in the handsome booklet entitled "Economy in Motor Tires," issued by the Firestone Tire & Rubber Company, Akron, Ohio. These suggestions have been compiled with the personal co-operation of the largest motor tire users in New York and other cities. The subject matter on "Economy in Repair" is also interesting.

Adam Cook's Sons, 313 West street, New York City, the only makers of "Albany Grease," have just issued a new booklet dealing with automobile lubrication. The text is interspersed with drawings showing just how Albany grease is applied in packing compression cups, transmission gears, etc., of interest to everyone who appreciates what an important feature lubrication has become in the economical running of the automobile.

RECENT INCORPORATIONS.

Spartanburg Automobile Company, Columbia, S. C.; capital, $5,000. Incorporators, F. L. Bryan, Charles Parker and others.

Pullman Automobile Company, Chicago, Ill.; capital $2,500. Incorporators, Charles O'Brien, H. L. Burnette and J. A. Burt.

Aurora Motor Works, Aurora, Ill.; capital, $30,000. Incorporators, James Selkirk, William George and Theodore Worcester.

Thomas Spark-Plug Company, New London, Wis.; capital, 5,000. Incorporators, J. F. Thomas, H. J. Bolinski and R. N. Van Doren.

Klink Motor Car Manufacturing Company, Dansville, N. Y.; capital, $400,000. Directors, F. R. Driesbuch, N. Uhl and E. O. Hoffman, Dansville.

Portland-Rockland Automobile Company, Rockland, Me.; capital stock, $10,000. Promoters, John A. Lester, Howard A. Sanborn, Percy M. Andrews.

Bond Bros. Co., Portland, Maine; capital, $10,000. To make and deal in automobiles. Pres., G. A. Hutchins; treasurer and clerk, C. H. Tolman, Portland.

Devac Auto Company, East Orange, N. J.; capital $500,000. To manufacture motors, automobiles, etc. Incorporators, F. C. Ferguson, Charles O. Geyer and A. W. Candit.

H. Bocker Company, Bronx, N. Y.; capital, $5,000. To manufacture boats, engines and motors. Incorporators, William F. Wahrenberger, Henry Bocker and Elizabeth Caron.

Oakland Auto Livery Company, Oakland, Cal.; capital stock, $25,000. Incorporators, J. W. Hoag, C. B. Newman, W. R. C. Jenks, Edwin H. Pendleton and Rodney Wilson, all of Oakland.

Victor Automobile Manufacturing Company, St. Louis, Mo.; capital, $2,500. Incorporators, Robert Horne, Grace Horne, Julia H. Harrington and Joseph F. Harrington.

Rahier Motor Car Company of Illinois, Chicago, Ill. To manufacture and deal in vehicles; capital, $20,000. Incorporators, John T. Rahier, Paul N. Lineberger and Edward Q. Cordner.

Austin-Hutcheson Company, New York City; capital, $5,000. To manufacture automobiles and carriages. Incorporators, Howard B. Hutcheson, Louis C. Hutcheson, Carol F. Hutcheson, New York.

Okey Motor Car Company, Columbus, O. To manufacture automobiles and engines; capital, $25,000. Incorporators, Perry Okey, Campbell Chittenden, F. M. Hoover, H. T. Stewart and H. E. Walton.

NEW FEATURES FOR JONES.

The 1906 model of the Jones speedometer was accepted as a most perfect speed indicator. In the Automobile Club of Great Britain and Ireland's reliability contest it finished with an absolutely clean slate and won the club's gold medal or highest award. The 1907 models are practically the same in construction and design as those of 1906. A new and valuable feature adding largely to the value of the Jones is the addition of a second maximum hand. In using two hands one is placed directly above the other as in a stop-watch. The upper hand is black, the lower red; each move independently of the other. The black hand indicates the exact speed at all times, changing with every change of speed and is permanent at that point, until changed by a touch on the resetting stem which is provided for that purpose. If a car is traveling at 25 miles per hour, for instance, the red hand indicates

JONES SPEEDOMETER FOR 1907.

25 and stops at that point. Now the car reduces speed to 10 miles per hour—the red hand remains at 25—the black returning to 10.

If an officer should signal the automobilist to stop while traveling at say 12 miles per hour, by a simple press on the button, the red hand instantly flashes to the speed at which the car is traveling and remains there—it does not return to zero. Here is proof and proof positive that the speed limit has not been exceeded and Mr. Autoist continues on his way. Heretofore the indicating hand returned to zero when the car was not in motion and arguments were practically always settled in court.

The second or red hand will also prove invaluable to the manufacturer for "tryouts." Cars are frequently sold to enthusiasts on a guarantee that they will "do" a certain speed. By use of this new instrument the red hand will indicate the highest speed and stop at that point. If at any time one should not want to use the red hand, by a simple turn of the resetting stem it is made possible for both hands to move together.

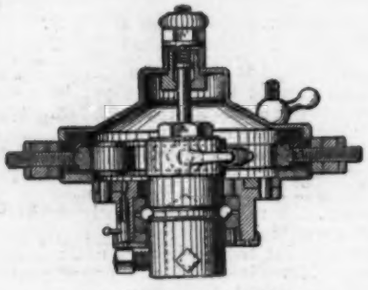
Of course, the instruments retain the odometer register; both trip and distance. The former registers distance to 100 miles; the latter to 10,000 miles; the "trip" is provided with an instantaneous re-setting stem—an exclusive feature claimed for the Jones instruments.

INFORMATION FOR AUTO USERS.

The Fry Adjustable Plug.—The spark plug handled by the T. C. & W. L. Fry Company, Rochester, Pa., is so constructed that it can be readily adjusted without removing any part from the cylinder. The negative hole is secured permanently in the center of the lower portion of the base, the positive pole being threaded in a metal sleeve and extending through the porcelain, bringing the points in a vertical line. The adjustment of the points is accomplished by raising or lowering the positive pole by means of an insulated wing nut attached to the top of the hole. Two bushings protect the porcelain in such a way that when it is removed the lower bushing is unscrewed from the base without the original packing around the porcelain being disturbed—consequently the porcelain can be removed, cleaned and replaced within the base of the plug without having to be unpacked. Poles are drawn to a taper, placed point to point in a vertical line, giving the hottest spark on the least amount of current.

FRY PLUG.

Wipe Contact Timer.—To meet a demand for a good wipe contact timer the Uncas Specialty Company, Norwich, Conn., has improved upon the standard types of timer by adding a supplementary ground terminal and an adjustable ball bearing in place of the plain bearing. This is to eliminate the two principal faults of timers, poor ground, and wobbling after running a short time, both of which will cause skipping when running at high speeds. The above faults are usually ascribed to the plugs, coils or carbureter.



A BALL-BEARING TIMER.

New Type Steering Gear.—A new form of steering gear likely to meet with much success among automobilists has been put on the market by the Briscoe Manufacturing Company. Its features are very slow acting for straight ahead running with increased rapidity of movement as the steering wheel is turned over. A three-quarter turn gives the maximum steering angle, but during the first quarter of the turn the ratio of movement of the road wheels is much lower than during the remainder of the turn. The mechanical parts are simple, consisting of an internal and external gear contained within a dust-proof and oil-tight metal case at the base of steering column. The internal gear is five-sixths of the diameter of the external gear and gives almost a surface contact, three teeth being always fully in mesh. A cam on the steering spindle fits into a hole through the center of the internal gear, which is pivoted to the casing, and drives it round the external gear by an eccentric movement.

Abell Speed-Meter.—All the parts in this speed indicator are concentric and work about a common center. The indication is shown by means of a pointer and dial similar to a clock, the hand making three-quarters of a circle before it reaches the end of the scale, which is 65 miles on a standard instrument and 100 miles on a special size. The hand is mounted on the top of a stem or pivot on the lower end of which is mounted a cup shaped shell lined with fiber and polished on its inner face, which serves as a race-way for four small weights in the form of cylinders. These weights are mounted loosely in drilled holes in the rim made disk which revolves about a stationary ball bearing stud and is driven by the flexible shaft. They are provided with polished glass friction points which after a great deal of experimenting, is found to be an ideal material for this use. When the machine is at rest the weights lie idle in their sockets without exerting any outward pressure, but immediately on rotating the disk carrying the weights, the weights themselves begin to move, fly out and press against the polished face of the friction cup. The sliding contact thus set up immediately starts the friction cup in motion, but as it is retarded by a spiral spring, it moves only as far as the friction set up by the centrifugal pressure of the weights will carry it. If the speed of the disk carrying these weights remains constant, the centrifugal effect on the weights also remains constant, and as this is the basic principle which controls the action of the pointer, the pointer itself remains perfectly still at any regular speed of the weights.

THE ABELL SPEED-METER.

The odometer used in connection with this instrument is of standard make and is driven with a small worm and gear by the same shaft that revolves the weights. The instrument is mounted on a pivoted bracket which can be fastened by screws to any convenient part of the dash board, and can be set at the proper angle so that it may be easily read from the seat. It is manufactured by the E. T. Kimball Company Motor Mart, 87 Church street, Boston.

Putnam Motors.—An interesting series of small four-cycle motors, air cooled and water cooled, with one, two, and four cylinders, is manufactured by R. H. Putnam, of 57 Lebanon street, Springfield, Mass., and castings and blueprints for making these motors are sold also. The list includes a 2 1-4-horsepower motorcycle motor, with 2 3-4-inch bore and 3-inch stroke, listed at $40; a double cylinder motor, with cylinders of the same size, placed at an agle of 60 degrees, rated at 4 1-2 horsepower and listed at $70; a four-cylinder 10-horsepower motor, with cylinders set at 60 degrees, built to order only; a 2-horsepower, single cylinder, water-cooled marine motor at $47.50; and a 4-horsepower motor of the same type costing $75. The list of built-to-order motors also includes an 18-horsepower, air-cooled, and a 28-horsepower, four-cylinder, water-cooled motor. The Putnam motors all have outside flywheels and valves in cylinder-heads operated by long push-rods.

A Puncture-proof Tire.—One solution of the tire problem appears to have been solved by the Puncture-proof Tire Company, 707 American Trust Building, Cleveland, Ohio. The general form of this new tire is indicated by the cut herewith. Best up-river Para rubber, compounded, is used for the body of the tire; the central air space and slit to the base of the tire being lined with layers of friction cloth, coated with a thirty-second of an inch of rubber between the layers of friction for the purpose of giving the tire strength and preventing any tendency of the rubber to crack. The clincher and the lower part of the outside of the tire immediately above the clincher also has layers of friction, covered entirely with rubber. The superior advantage claimed for this tire are a resilience equal to that of the pneumatic, and an entire absence of punctures and their resulting accidents and expense. To fit the puncture-proof tire, the wheel is jacked up and one side of the tire placed in the clincher all the way round; the sewed side is forced in by means of a machine built for that purpose. Thus held, they form a perfectly solid base between the clinchers, but as a further precaution, steel pins are placed in the base through the bead or clincher of the tire, an inch and a half apart alternating on either side. The puncture-proof tire was on exhibit at Madison Square Garden, but was unfortunately omitted from our account of the show through inadvertence.

CROSS-SECTION PUNCTURE-PROOF TIRE.